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S 3902

FIELD: Rosenberg
TYPE OF JOB: Casing (drill pipe cemented in hole)
DEPTH OF WELL: 7,743 ft.
MAX. TEMP.: 180° F.
SLURRY WEIGHT: 16.5 lb. per gal.
CEMENT USED: 'Starcor', 570 sacks
PUMPING-DOWN TIME: 35 min.
MAX. PUMP. PRESSURE: 1500 lb.
REMARKS: When they topped the sand, well blew out around surface pipe. Mud-weight was then raised from 10.5 lb. per gal. to 14 lb., and surface-casing re-cemented. Then they found the drill-pipe was stuck; instead of trying to pull it or cut it from hole, they cemented pipe in the hole with 'Starcor'.

W 1419

FIELD: Jefferson Texas
TYPE OF JOB: Retainer squeeze
DEPTH OF WELL: 6100 ft.
MAX. TEMP.: 196° F.
SLURRY WEIGHT: 16.4 lb. per gal.
CEMENT USED: 'Starcor', 36 sacks
REMARKS: 20 sacks 'Starcor' pumped into formation with maximum pressure 3800 lb. Well had been making 210 bbl. fluid -- only 10 bbl. oil. After squeezing, well made 252 bbl. oil on ¼ in. choke, with 0.3% water.

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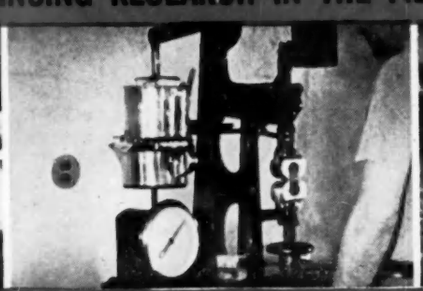

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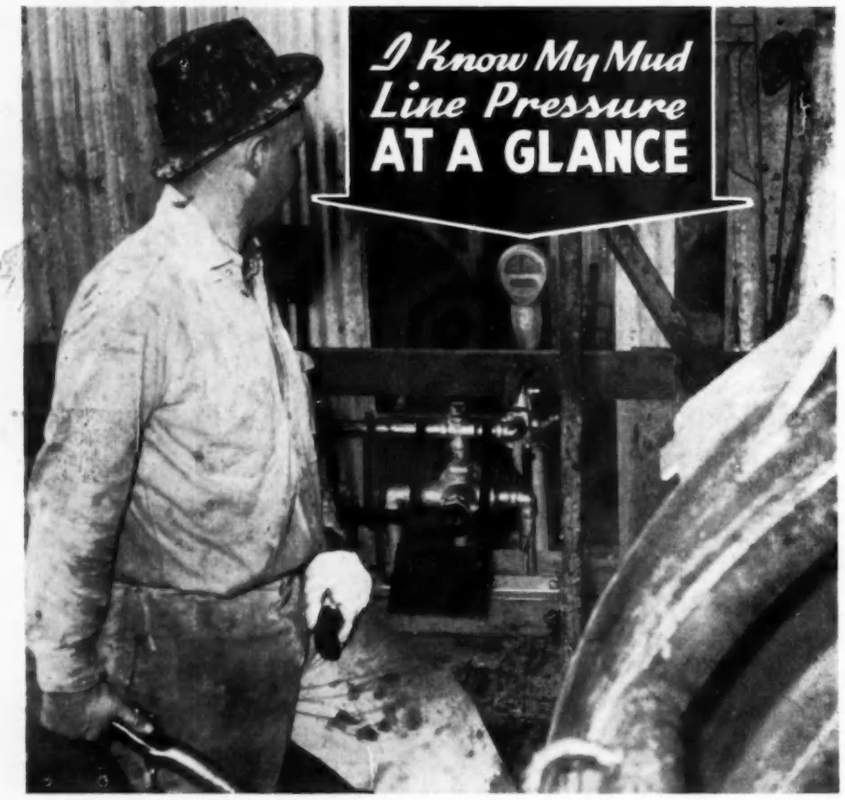

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LOOKING AHEAD

WITH THE EDITOR

International Issue Will Review World Oil Conditions.

FOREIGN nations are taking up more space on front pages of newspapers today than they have for years because political upheavals in Europe and the Far East have generated not only war news but news of the disruption of trade and industry, including oil.

Therefore, March 18 looms as a particularly appropriate date for publication of the International Issue of THE OIL WEEKLY, which will present a general, all-around picture of the world-wide oil situation from drilling, production, exploration and transportation angles.

Not a few of the countries covered by special articles in that issue will be those of which we have heard little lately, due to the functioning of military censorships and to the diplomatic and commercial influences of the belligerents and their neutral sympathizers.

★

Complete statistical data for 1939 will be presented on a number of foreign countries from which such data have not been available up to the present. And where possible within the realm of reason, forecasts of what will happen in certain countries during 1940 will be made in articles dealing with those countries.

Taken all in all, the March 18 issue will represent a remarkably complete symposium of the current situation in those branches of the oil industry to which this magazine is devoted.

The OIL WEEKLY. Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

E. Eng Lib

THE OIL WEEKLY

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The Oil Man's Calendar

MAR. 14–15	American Petroleum Institute, Mid-Continent District, Division of Production, Wichita, Kansas.
19	American Petroleum Institute, Pacific Coast District, Division of Production, Los Angeles.
28–29	American Petroleum Institute, Southwestern District, Division of Production, Houston, Texas.
–31 APR. 2	Western Petroleum Refiners Association, Wichita, Kansas.
APR. 9–11	Society of Exploration Geophysicists, Chicago.
10–12	American Association of Petroleum Geologists, Chicago.
11	Society of Economic Paleontologists and Mineralogists, Chicago.
	Petroleum Fluid Metering Conference, Petroleum Division, A.S.M.E., Norman, Okla.
11–12	American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.
16–18	Southwestern Gas Measurement Short Course, Norman, Okla.
18–19	National Petroleum Association, Cleveland, Ohio.
26–27	Petroleum & Natural Gas Conference, State College, Pa.
MAY 1– 3	Petroleum Industry Electrical Association, Dallas, Texas.
6–10	American Gas Association, Natural Gas Section, Houston.
15–17	Natural Gasoline Association of America, Tulsa.
18–25	International Petroleum Exposition & Congress, Tulsa.
27–31	American Petroleum Institute, Mid-Year Meeting, Ft. Worth, Texas.
30–31 June 1	National Oil Scouts and Land Man's Association, Hot Springs, Ark.
JUNE 1	Illinois-Indiana Petroleum Association, Robinson, Ill.

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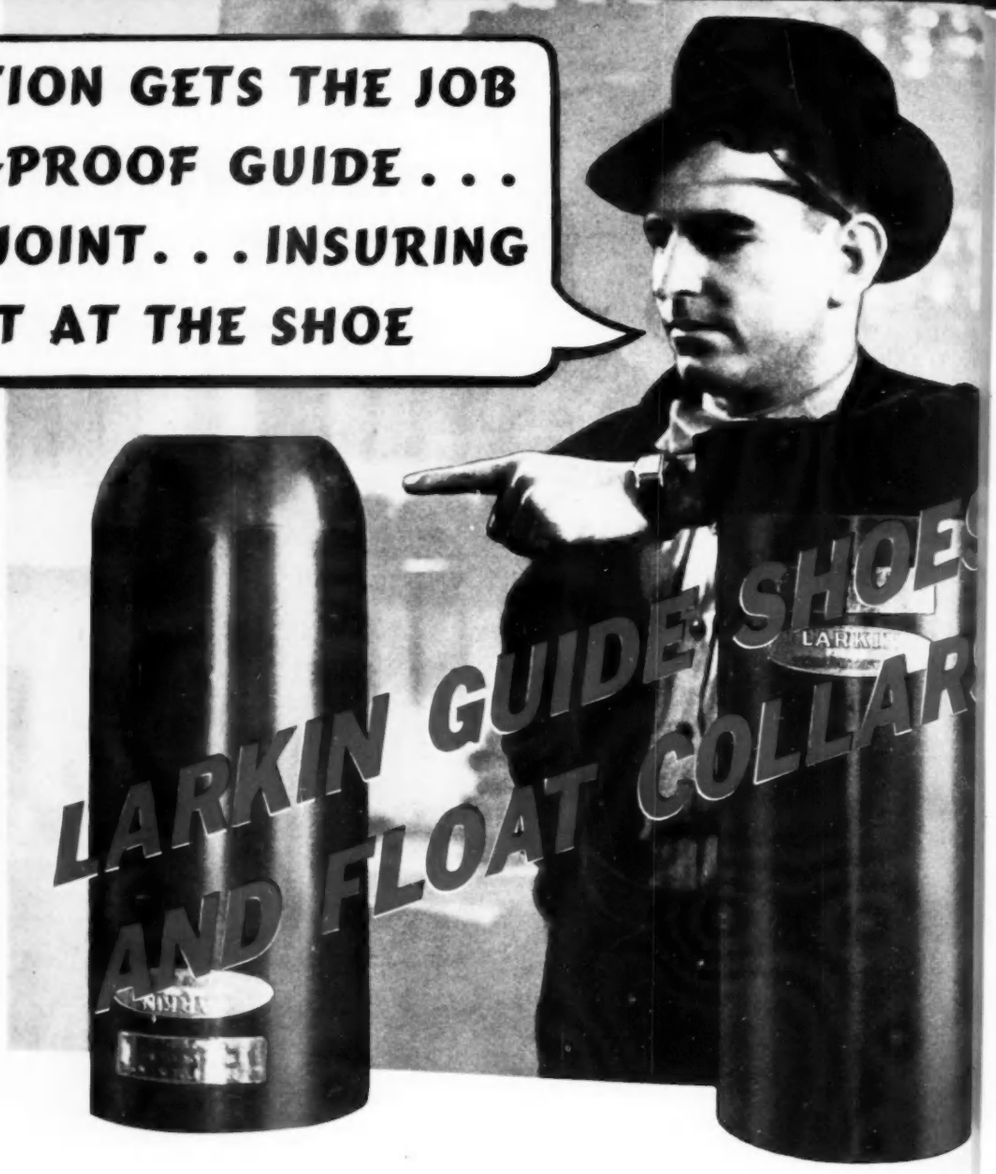

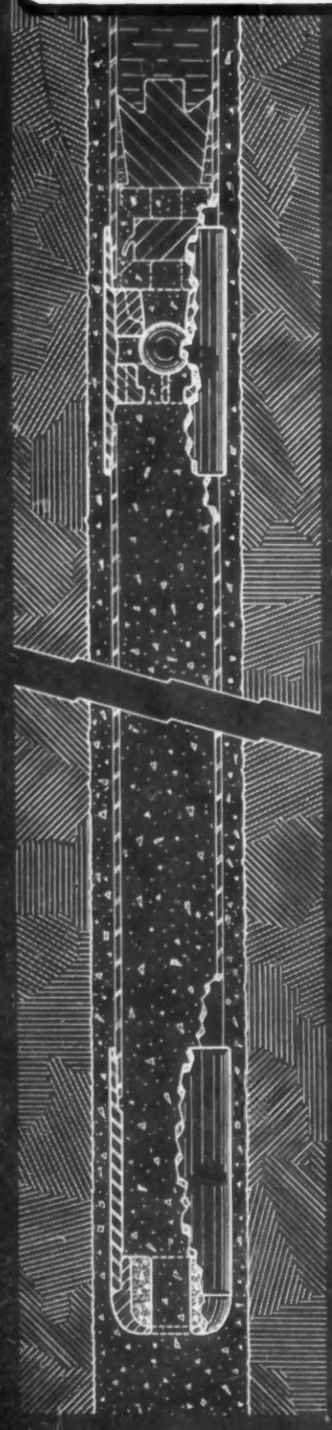

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THE OIL WEEKLY

MARCH 11, 1940

VOLUME 97 NUMBER 1

The Week's Panorama

WHEREAS large refinery runs have been the principal threat to the industry's stability heretofore, excessive crude production now is a matter for concern. Liberalized allowables in Texas, New Mexico, and Louisiana add to the problem caused by unrestricted production in Illinois.

Crude output far exceeds indicated market demand, and is close to the all-time peak of 3,909,400 barrels daily that was reached last August.

Refinery Runs Cut . . . . . .

Refinery runs, in contrast, have been brought down to more moderate proportions. They were reduced further in the week ended March 2, and a needed curtailment of gasoline production occurred.

Gasoline Stocks Up . . . . . .

The accumulation of gasoline stocks, exceptionally great this winter, was somewhat curtailed in the week ended March 2. The addition was approximately 1,700,000 barrels, with plant output for the 7 days about 400,000 barrels smaller than that in the previous week.

The increase put stocks up to 98,364,000 barrels, another all-time peak, and 15 percent above the 85,596,000-barrel level of the corresponding time last year.

Oil Company Earnings . . . .

Oil company earnings for the first quarter of 1940 are expected to compare unfavorably with the good earnings of the final quarter of 1939, because of the decline of one half cent a gallon in the refinery price of gasoline since late last year. However, better results than in the initial quarter of 1939 are indicated. For gasoline prices are a little better than then, prices of other products are materially better, and volumes of business are greater for both producers and refiners.

Demand Outlook Good . . . .

Economists continue hopeful regarding the outlook for oil demand in 1940. Another gain of around 5 percent in domestic consumption of gasoline still is anticipated, although it is believed that total demand for that product will be up by a somewhat smaller percentage, because of curtailed exports.

Refining Progress . . . . . .

Because of the remarkable advances that are being made in refinery technology, the oil industry's long-term outlook is considered by some as particularly hopeful. The improved processes permit more efficient utilization of raw materials, make operations more economical, and yield profitable new finished products.

Producing Progress . . . . . .

Similarly, methods and equipment for finding and producing oil continue to advance, and the progress will help to assure commendable and profitable operation of the industry.

Problems in Economics . . .

As throughout industry in general, the economics of the industry poses probably the most difficult problems. Geologists, geophysicists, engineers, and the men in the fields and plants find ways to provide plenty of oil cheaply. But the transfer of oil from the earth's crust to the automobile tank or cellar furnace requires complex and delicate economic activities which are not thoroughly understood and which are never in perfect adjustment.

Illinois Peak . . . . . .

There is much guessing on what the peak of Illinois crude production will be and when it will occur. The top is variously estimated at 450,000 to 550,000 barrels daily, and next fall is set down as the time. Illinois produced at a record rate of 414,200 barrels daily in the week ended February 24, and in doing so, ranked third in production, following Texas and California.

Oil in Politics . . . . . .

In the politics of Texas, No. 1 oil state, the oil industry this summer will have its traditional role of the man at the carnival who dodges the rotten eggs. Ever since the Lucas gusher gushed, men seeking office have rolled up their sleeves and hurled missiles at the big, bad oil companies.

Old Age Pensions . . . . . .

The promise to provide old age pensions still is an open-sesame to public office, and it will be worked over-time in Texas this summer. But voters gradually are realizing that money must be raised somewhere if money is to be paid out, and more and more office seekers are proposing that the money should come from taxes on crude oil and natural gas.

Oil Tax Proposed . . . . . .

The proposition that has just been offered by Jerry Sadler, Texas Railroad Commissioner, in his announced candidacy for governor, is to finance old age pensions with taxes of 2¼ cents a barrel on crude oil and 1 cent a thousand cubic feet on natural gas produced in the state. Two years ago the snuff-dipping, young East Texan, with a hillbilly band, convinced the voters they should "Put Sadler in the Saddle."

Distribution of Allowables

By DR. IONEL I. GARDESCU
Gardescu and Speed, Consulting Petroleum Engineers and Geologists

ON what basis should production be distributed among the wells in East Texas if the allocation problem is confined to the legal rights of oil ownership? This is a question that will confront the Texas Railroad Commission if the Supreme Court upholds lower court decisions that are being appealed. The measure that may be adopted is of vital and direct interest to the more than 1000 well owners in the field. Moreover, it may have far-reaching influence on proration practices in other fields of Texas, and perhaps in other states as well.

Rights of Ownership

Legal rights of oil ownership may be set forth under the following four classifications:

1. Each operator and royalty owner whose lease is being depleted as a result of withdrawal of oil by either his wells or other wells is entitled to a fair share of the oil being drained from underneath his property.

2. Each operator and royalty owner who has an interest in a well drilled within the producing limits of an oil field is entitled to a fair share of the oil being produced by the field, which share should be in proportion to the producing capacity of his well or wells.

3. Each operator and royalty owner whose lease is underlaid by a certain quantity of recoverable oil is entitled to produce a fair share of the oil, which should be in proportion to the quantity of recoverable oil underlying his lease.

4. Each operator who has drilled and completed an oil well, which, if allowed to produce, would pay for itself, should not be compelled to produce this well at a rate that would result in a confiscation of his investment.

The merits of the first three basic principles are obvious and I consider them equally important. The fourth principle is only a provision intended to prevent confiscation of ownership. The minimum daily allowable that would assure a return of the capital invested in a well is 10 barrels and the number of wells covered by this provision is relatively small. The total daily production of the wells falling under this provision will not be of material consequence.

This production together with the "marginal well production" should be deducted from the total daily field allowable, leaving what will further be referred to as the *net* East Texas daily allowable.

Suggested Plan

The allocation of production involving more than one basic factor should be computed on the arithmetic average of these factors and not their product. This point is illustrated by assuming that the allowable of a lease is to be governed only by its well potential and its lease reserve, and that this particular lease is underlaid by 1/3 of the acre feet of oil sand underlying the "average lease," and the potential of the well drilled on this lease is 1/3 of the potential of the average well. By multiplying 1/3 by 1/3 the lease would be given 1/9 of the allowable of the average lease. On the other hand, by dividing the allowable of the average lease in two and giving the lease under consideration 1/3 of the one half on the basis of potential and 1/3 of the other half on the basis of reserve, its total allowable would be 1/3 of the total allowable of the average lease, which is in line with our premises.

Figure 1 is a diagrammatic cross-section sketch through the East Texas field. The shaded area represents the volume of depleted sand which has contributed to the 600,000 barrels produced during the average day. The western half of the field (A to B) is the only portion of the field that has been depleted as a result of water encroachment to the extent shown by the shaded area.

The sketch further shows that the oil sand underlying each acre of land located between A and B has been equally depleted as a result of the water encroachment regardless of the amount of undepleted sand that overlies the depleted portion of the sand. In view of these facts it follows that: (a) The owners and operators of leases located in the depleted area (A to B) should be entitled to a share of the oil before the remainder of *their* oil is divided among all the owners and operators of the East Texas field. (b) The division of the share of oil described under (a) should be directly proportional to the "area" of each lease that is being depleted. Therefore,

1. One-third of the net East Texas daily allowable should be prorated among all leases that fall to the west of the oil-water line on the basis of acreage. Only productive acreage that is being depleted as a result of water encroachment should be considered.

The remaining 2/3 of the oil would be equally divided among all of the operators and royalty owners on the basis of potential and reserves.

As stated before, both of these basic principles are considered equally important. The basis of my argument is that if all wells were allowed to produce freely, their individual production and recovery would be governed by the ability of each of the wells to produce. That is the fundamental law of capture, the law of drainage or the law of physics as it has recently been referred to. Without drainage there would be no production for any of the lease owners shown on the sketch from B to C because every barrel that they produce is the equivalent of oil that has migrated from the lease owners

In East Texas Field

from A to B. Therefore, the field is not being produced on the basis of "oil in place" but as a result of migration. And migration is the law of capture which is governed by the ability of wells to produce. It is a fundamental law that cannot be discarded—not only because of its legal value but because it reflects the fact that migration exists as a physical force of nature that cannot be stopped by any kind of legislation without the closing-in of thousands of wells. To divide 2/3 of the remaining oil equally on the basis of potential and on the basis of oil in place is the only fair basis of allocation of production. Therefore,

2. One-third of the net East Texas daily allowable should be prorated among all wells drilled in the East Texas field on the basis of the proportion of the potential that each well bears to the total potential of all the wells, and

3. One-third of the net East Texas daily allowable should be prorated among all leases in the East Texas field on the basis of the proportion of the volume of oil-saturated sand underlying each lease to the total volume of oil-saturated sand in the field.

Discussion of Plan

It has been argued by some that the allocation of production on the basis of potential gives unfair advantage to the densely drilled areas. This is not true as a rule, though there may be some exceptions. It is a well-recognized fact that dense drilling has caused differential water encroachment as reflected by specific examples that show the relative water level to be higher in the "London area," for instance, as compared to surrounding less densely drilled areas. Also, this same fact is illustrated by the relatively higher percent depletion of more densely drilled areas in the East Texas field as compared to less densely drilled areas. Many examples may be cited where this same condition occurs. This differential encroachment in the densely drilled area results in a higher rate of depletion of the sand, a premature abandonment of the area and a loss of ultimate recovery of oil for the densely drilled area instead of a gain as claimed by some.

The allocation of production under this plan is simple. The acreage of producing leases west of the water line is readily available from the records. The acreage of leases located in the vicinity of the line should be adjusted from time to time as the line shifts toward the east. The allocation on the basis of potential and acre-feet of oil sand is now in effect and the data is available.

In its application this plan differs very little from the present allocations of the Railroad Commission. The plan would increase the present daily allowable of the western marginal wells to about 23 barrels and up. Very few wells, if any, would fall below the 20-barrel mark because the proposed allocation would give each well approximately 15 barrels as a result of depletion sustained plus a fair share of the oil on the basis of potential and a smaller share of the oil on the basis of reserves. The wells to the east would receive somewhat less than their present allowable, but their ultimate recovery would be greater than the computed volume of recoverable oil in place. The leases and wells in the fairway would receive a share of the oil that would be as nearly as possible equivalent to their reserve of recoverable oil.

In other words, the western leases would recover somewhat more oil than they have in the past but less oil than is shown by their reserves. This oil would be produced sooner and therefore its value would be greater and the loss in ultimate volume would thereby be compensated. The eastern leases would ultimately get somewhat more oil than is shown by their reserves, but because of delayed or retarded earnings their present value would be at par with other leases.

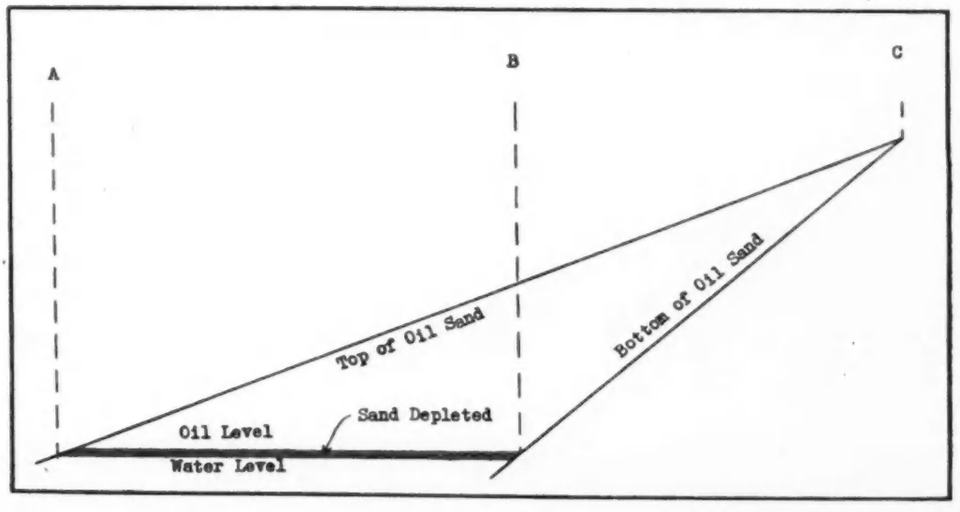

FIGURE 1
Generalized Cross Section Through the East Texas Field.

Principles Underlying of Oil

A GOOD DEAL is being said about proration, well spacing, equitable withdrawals, well allowables, bottom-hole pressures, gas/oil ratios, etc. One of the most serious difficulties confronting the industry is curtailment of production on a basis that appears fair to all concerned. Various formulas have been proposed and tried for establishing equitable withdrawals in different fields. Many of these, in the writer's opinion, are unfair and are based on incorrect premises. There are certain principles underlying equitable withdrawal of oil that cannot be avoided.

During the early days, little attention was paid to the principle of withdrawal of oil from given acreage. Inasmuch as it became generally accepted that oil existing in the reservoir at the time of penetration belonged to the lease owner of each tract, and as the nature of oil deposits became better understood, there was a growing consciousness of the need for drilling wells on uniform spacing. Until within the past few years, the attempt to arrive at equitable withdrawals confined itself largely to the question of well spacing, and in many fields it was customary to locate wells certain distances from property lines.

So long as open flow conditions were in vogue, there was little complaint against methods employed by a neighboring lease owner in getting his oil. If methods were being used that obtained better results, the improved technique could be adopted by other operators.

During the past 10 years there has been a pronounced oversupply of producible oil, and this excess of available supply is supposed to be increasing. Consequently, production has been curtailed to demand proportions. The tendency of thought is developing that withdrawals should be based on some factor, or several factors that allow one operator to enjoy the privilege of the withdrawal of the proportionate share of his recoverable oil within a given period of time as any other operator in the same pool. This has introduced many problems of a nature that did not exist when operators could produce their wells as they saw fit. Financial worries, engineering studies and politics, both state and federal, have been injected into the picture under the conditions that have been imposed by necessity for restricting production. These problems have become complex, and are growing increasingly so as this condition becomes aggravated. Hypotheses are set up as a basis for handling the restriction of production in a manner that is often unsound. Laws are enacted that are intended to provide equity on the supposition waste exists, which in some cases have rather flimsy foundations; but it is argued that they are needed in this form to avoid the penalties that are im-

Proper distribution of production in the unevenly drilled East Texas field is one of the most perplexing proration problems of the industry. Formerly allocated on a per well basis, courts recently held that allocations had to be made on a basis of oil in place and acreage. The decision is now being appealed. The ultimate outcome of the case will have important bearing on future proration methods.

Equitable Withdrawals

By S. F. SHAW, Consulting Engineer

posed by other laws, if considered in some other light.

Perhaps the most contentious phase of the subject is that of the quantity of oil that may be produced from a given well. The methods of withdrawal should not be such that one operator can withdraw much greater percentages of his recoverable oil during a given period than an adjacent operator; since this tends to lower the pressure in the area heavily produced to a lower point than in the nearby sector, and thereby causes oil in the adjacent property to flow into the area where production is proceeding at a high rate. However, withdrawals under conditions of open flow in past years leave no doubt that one plot of ground will produce very different quantities of oil from that of adjacent acreage.

The Law of Capture

We sometimes hear the statement that the "Law of Capture" is inequitable, that it is outmoded, and other statements to the same effect. But, owing to the very nature of oil and gas as they exist in the reservoir, the fact remains, and probably always will, that the rule or principle of capture still exists and will continue to exist regardless of statutes enacted to prevent or to modify its operation. By this is meant that oil and gas always will seek the line of least resistance in flowing to a well. It would be impossible to enact and enforce a law limiting the oil that an operator produces under any and all conditions to only that portion lying under his acreage. There is no law, legal or physical that can prevent the oil and gas in a given property from moving into a property where lower pressure exists. If the owner of such a property decides that he will not drill and produce his oil, whether he wishes to delay production or whether he feels that he can do so only at a monetary loss, he cannot hope to retain all his oil under his own property; nor can he justifiably complain if his neighbor elects to continue producing even though some of the oil comes from the property where operations are discontinued.

The rule of capture is set up at once when a wildcat well begins producing, at which time oil from all directions begins to seek an outlet at this well. Unless other wells are drilled, the oil from a distance will continue to seek an outlet at this point. So far as I can see, there is no legal or practicable way of preventing the owner of a wildcat well from continuing to produce oil from his well. As a matter of fact, the law of capture has not been abolished, nor can the physical principle or rule be abolished by law, whatever be the legal status. However, the practice of obtaining equitable withdrawals can be bettered by diligent drilling, uniform spacing, and in periods of restricted production by means of setting up equitable daily withdrawal rates.

In many cases, special consideration is given to the discoverer of a pool in the way of allowing an

Wells in the townsite portion of the Oklahoma City field must have at least 2½ acre spacing. Wells situated outside of the city have 10 acre spacing. Allowables are based solely on potentials, which are established at six-month intervals.

increased production over a limited period of time. This may be fair in many respects, and probably the owners of neighboring acreage are glad to contribute in this way to the discovery of a pool, and to the partial proving up of their acreage. Yet from the equitable withdrawal point of view this is not fair, inasmuch as the discovery well will inevitably withdraw oil from adjacent acreage, the extent of which will depend upon the rate at which the discovery well is produced, and the distance from the well at which the withdrawal effects make themselves felt, at least until other wells are drilled in the vicinity of the discovery well.

It would not be fair to deny the owner of a wildcat well the privilege of producing oil if, for instance, the owner of the adjacent property wishes to delay for months or for years the drilling of his own property. Operators and law alike take the position that if the owner of the adjacent land wants to retain possession of his oil, he should drill his acreage with reasonable diligence and produce his oil.

If the owners of adjacent acreage do not consider it desirable to drill their acreage (whether it be from doubt as to whether their land is underlain by oil, whether they doubt that the enterprise will become profitable, or whether they are disinclined to consider drilling for any other reason whatsoever) the discovery well will continue to withdraw oil from the surrounding acreage. There are not many who will say that the discovery well should be shut-in indefinitely, or shut-in until the adjacent owners decide whether and when to drill their acreage. Thus, the so-called legal law of capture continues in effect, as well as the physical law of capture. Even after the field is well developed, an owner of acreage may not wish to drill, and in this case oil is withdrawn from his property. In some cases, it is not desirable to drill under cemeteries, or under large and expensive buildings, and again in such cases, the law of capture continues to operate.

Even after the wells are all drilled, there are operators who do not drill efficiently, or complete their wells in the best manner, or who do not produce their wells efficiently. Here again the law of capture continues to function, since some of the oil under such areas is likely to move into the adjoining acreage of lower pressure.

Going still further, many wells are abandoned before all the recoverable oil has been produced, because the lifting methods at some wells have become too costly to continue operations. Such instances are seen in a Gulf Coast field where small casings were employed in most of the wells, and where water encroached in very large quantities after the flush production was over. These wells with small casings had to be abandoned because they were unprofitable to operate. Other wells, completed with larger casing and operated more efficiently, are continuing on production at a profit, and unquestionably are capturing oil from the adjacent acreage, and yet no one complains. Owners of wells in many large fields have abandoned their wells, some of which may have been large producers, owing to the operation becoming unprofitable. Other wells remain on production, thus continuing the inequitable withdrawal of oil and maintaining the law of capture, regardless of the laws of capture, or non-capture. In other words, if a man elects to allow his neighbor to take possession of the oil through his own inaction, it would seem foolish to complain about inequitable withdrawal in such cases, although they do exist.

Even in the attempt to arrive at equitable withdrawals by regulatory commission rulings, inequities are set up, such for instance, as flat allowables, wherein all wells in a given field are allowed to produce the same daily allowable provided they are drilled on the same drilling spacing. Flat allowables tend to allow the poor wells to withdraw oil through the sand from better producing sections of the field. East Texas is a case where great inequities exist, despite the strenuous attempts of the Texas Railroad Commission to restrict production in an equitable way. Wells in certain portions of the field are drilled on very close spacing compared with other leases, which tends toward inequitable withdrawals; at other times, such wells with heavy per-acre withdrawals are allowed to replenish themselves from surrounding acreage by shut-down programs, still further aggravating the inequitable withdrawal condition, despite the efforts of the commission to handle the problem in a satisfactory manner.

There are means for recovering the oil that are now considered fair, and other means considered unfair. Customary procedure as well as the law takes cognizance of this matter in that certain rules are set up by which the producer should be guided in conducting his operations whereby unfair advantage is not taken of the offset acreage, if the owner of the offset acreage acts with reasonable diligence to recover the oil under his property.

Factors that Determine the Quantity of Oil in the Reservoir

The quantity of oil that is contained in a given reservoir is usually considerably greater than that which will be recovered. The contents of a reservoir depend upon several factors, the most important being as follows:

1. Thickness of the producing formation.
2. Porosity of the producing formation.
3. Percentage of saturation of the formation.
4. Percentage of the producing formation occupied by oil, gas and water.

The recoverable contents of the reservoir depend not only on the four factors just mentioned, but also on additional factors such as:

5. Pressure in the reservoir, principally a factor of depth.
6. Permeability of the formation.
7. Economics.

In a general way, the influence of each of these factors is understood as it relates to the recovery of oil, but the quantitative rate at which each factor affects the recovery is, perhaps, not so clearly understood. Rough approximations are employed for making estimates of recoverable oil, based on the factors enumerated. The statement has been made that geologists and engineers can estimate within 3 percent of the recovery that will be obtained in a given pool, but this does not check with the observations of the writer on his own estimates nor on those of other geologists and engineers. In fact, comparisons made of some estimates by reputable geologists and engineers with recoveries actually made, do not check within 25 to 50 percent of the oil actually recovered from a given lease at the time that the lease was abandoned. Reserves are often over-estimated, and they are many times underestimated.

Estimates of ultimate recovery are necessary in order to determine whether development of an oil reservoir will be profitable. They are needed to serve as a basis for lend-

ing money on such development or for the purchase of an oil property, but it should not be assumed that such estimates can be made with the same degree of accuracy that applies to the measurement of timber in a forest reserve, or even the measurement of ore that has been blocked out in a mine.

In a general way it is probably clear that greater thickness of the producing horizon, greater porosity, greater degree of saturation, greater degree of permeability, and greater pressure all tend toward higher ultimate recovery per acre. Other factors may not show the same tendencies. For instance, a large quantity of gas associated with the oil could act in either direction; as an example, a large quantity of gas dissolved in the oil or existing in a free condition as a gas cap means that there remains less space in the reservoir to be occupied by the oil, while on the other hand, a large quantity of gas means that there is available a greater store of energy for moving the oil to the well and lifting it to the surface.

Well Potentials

It is generally understood that the greater be the factors that tend toward ultimate recovery, the greater, in general, will be the daily initials and daily potentials that are established. In other words, it has been observed that the daily capacity of the well to produce bears some relation to the ultimate recovery. This relation cannot be defined exactly for wells in different fields, or even for wells in the same field, but if potentials are taken at intervals sufficiently close together, this method will probably serve as a more reliable index of ultimate recovery than any other index so far tried out.

The writer once had occasion to evaluate the ultimate recovery of several groups of leases in a large field, and employed the method of multiplying the initial production of each well by a factor that had been worked out for these special conditions, while a co-worker employed a method that is more usually employed. Subsequent results to date in this instance indicate that the estimates based on initials will be closer to the actual ultimate recovery than the other method employed. Of course, such a method for estimating reserves is dependent on having initials and potentials honestly established, and it is the duty of proration officers delegated to handle this work to see that potentials are fairly established as much as it is to see that hot oil is not being run.

Whether or not potentials be employed for determining the rate at which the well is allowed to produce, the writer for his own information would desire to ascertain periodically the various production rates, including the maximum rate at which the well would produce and the co-relative data accompanying each of these rates for any wells for which he is responsible. It is only in this way that the operator can tell anything definite as to what is happening in his wells as production continues over a period of time. The potential in many respects is the combination of all the forces or factors in the reservoir that indicate the productivity of the well, and it is important from time to time to have information as to these productive rates.

Many arguments are advanced to discredit the use of potentials as a basis for setting allowables, some of which are noted herewith:

1. Waste of gas.
2. Water coning.
3. The method is inequitable.
4. High cost of taking potentials.
5. The tendency to fudge potentials.

Of course, consideration should be given to all the objections advanced. Yet after due consideration has been given, the writer is of the opinion that the potential serves as the most equitable method of allotting production, and he has observed few of the ill effects mentioned by various objectors, even though there are now and then instances that can be mentioned serving to substantiate such objections.[1]

The writer has tested wells in a great many fields in various countries, and feels that the objections to taking potentials are overdrawn, and in some cases the objections may cover some other reason than that of the objection cited.

There are, of course, fields in which open-flow potentials cannot be taken, as in areas where there is a considerable thickness of loose unconsolidated sand where open-flow potentials would tend to allow such large quantities of sand to enter the well that the well would be endangered. Such conditions should, of course, be studied and methods devised for going only as far in the taking of a potential as is safe to do so.

Where it is unsafe or undesirable to take an open-flow potential, proposals have been advanced for taking observations on the flowing pressures at different rates of flow, or on the fluid level,[2, 3] and to construct a curve from the data that can be extrapolated to determine the theoretical open-flow capacity with flowing pressure at zero, or with fluid level at the level of the producing horizon. This method is far from being accurate in many cases due to the character of the formation in the vicinity of the

Wells in the prolific portion of the closely spaced, but restricted Wilmington field of California have a maximum allowable of 185 barrels per well. For smaller wells potentials are used as a basis for calculating daily allocations.

well, but the method proposed follows the principle of using the productivity of the well as a gauge of the potential. Tests that have been made over long ranges of flow indicate that such a curve is not a straight line, but is concave downward, the degree of curvature depending on the tightness of the formation.[4, 5] In very tight formation, the curve will reach a point where no additional production can be made, however much lower the flowing pressure be reduced. In very porous formation, the curve will tend more toward a straight line. Theoretically, in a well bottomed in a cavern, or let us say in an open lake, the flow will depend only on the size of the pipe, providing there is sufficient energy available, either natural or artificial, to lift the liquid, and in this case the curve approaches a straight line. Sand or limestone reservoirs, of course, are not of this nature; the liquid must filter through the reservoir rock, thus setting up a draw-down condition in the well.

If it be desirable to take an open-flow potential, it would probably be advisable to agree upon some maximum potential which is located at a point not too far down the slope of the draw-down curve, in order to avoid the increased inaccuracy in projecting a graph, the curvature of which is not known. As a rule, the degree of curvature on cross-section paper increases as the lower end of the curve is approached. From the results of tests taken in Kansas while establishing potentials by means of draw-down fluid-level data obtained by using instruments that measure neither pressure or depth direct, it would appear as if such methods of establishing draw-down curves are sometimes inaccurate. If fluid levels are employed, the levels may fluctuate, depending on the relative quantities of oil and water that stand in the casing, the percentage of which may change during the testing operation. Probably the draw-down curve established by actual bottom-hole pressure instruments is more nearly accurate than any other similar method so far devised.

Data have been obtained in some oil fields for determining the rate at which a well will flow either naturally or on gas-lift through a given diameter and length of pipe, where there is a given flowing pressure at the bottom of the pipe, and this pressure can be converted into the equivalent number of feet, or depth, of the fluid being lifted.[5] If these pressures are observed for several rates of flow, at a given period, a draw-down curve can be constructed that represents accurately these relations within the range of conditions observed, but the extrapolation of these curves to represent capacity of the well at ranges of pressure, or fluid level, much beyond the point of the last observation is likely to result in considerable error, as has been observed by the writer. However, the flowing pressure is a function of potential, and can be so used if the observations are carried sufficiently far along the curve.

On the other hand, static reservoir pressures observed after a short period of shut-down, are in no sense a measure of potential, neither do they represent energy quantitatively possessed and available by the gas and oil lying beneath a given area on the surface, therefore, are not necessarily indicative either of the reserves existing within a given area, nor the potential of the well, and I cannot see why such pressures should be employed in allocating daily allowables. In tight formations, especially in widely-spaced wells, it may require several days of shut-down for the reservoir pressure to reach equilibrium so that it can be observed properly in a given well. Shutting in a well for several days to obtain reservoir pressures is not practicable in most fields, and in such cases, pressures observed after 24 hours shut-down would have no meaning, even if the reservoir pressures could otherwise be employed as a means of allocating daily allowables. Position on the structure, whether at the high point or on the low point in steeply tilted formations, will greatly influence reservoir pressures. Wells completed down the flank sufficiently far to obtain only water have higher reservoir pressures than oil wells higher on the structure, but serve no purpose for determination of daily allowables or of ultimate recovery of oil.

Spacing of Wells

The proper spacing of wells has occasioned much discussion. Some argue that close spacing is desirable to recover the maximum percentage of oil that exists in the reservoir. Others go the limit in an opposite direction, and a few have gone so far as to assert that one well would recover all the oil in a field if given sufficient time.

There are many sides to the spacing problem. One operator wants to recover his oil quickly, while another operator prefers to produce his oil slowly. If an operator has a refinery in which he has need for the type of oil produced in a given field, it is only natural that he wants to produce that oil in accordance with his special requirements.

The price of oil has a most important bearing on the spacing question. If the price is high, and this condition usually accompanies a deficiency in supply of oil, it is only natural that the operators want to turn their reserves quickly into a good profit, not knowing what the future may bring forth as to price and demand, and a condition of high demand would require closer spacing and maximum production methods to meet the demand.[6]

The best spacing for a given field is seldom determinable in advance of the development of the field, nor a knowledge of the price that will be received for the oil, as well as the cost of producing the oil during the life of the field. Since these factors can seldom be known in advance of development and exploitation, the element of luck plays an important part in the matter of well-spacing.

A pool with low initial reservoir pressure, a low degree of permeability, and one which lacks an active water drive must be spaced closely to avoid low ultimate recovery. Results in the Bartlesville sand in Oklahoma are illustrative of such conditions. Even with spacing as close as five acres per well, cores, obtained of the sand between wells after ten years or more of maximum production methods, sometimes indicate that very low percentages of oil recovery were obtained. In Bristow, wells drilled at 50 feet from other wells that had been producing for several years, have been completed for production almost as great as the original wells. In such pools, where gas-drive or water-flooding is attempted, it is usual to drill additional wells, even in areas where spacing is already close.

In areas where relatively high pressures are maintained, and where there are irregularities in the top of the producing formations, it is sometimes found that intermediate wells drilled years afterward produce appreciable

quantities of oil. It would seem that high pressures tend to trap oil and gas in local high spots and prevent them from joining the flow to the producing wells, and only close spacing will allow these high spots to be located and the oil recovered. Luling, Texas, is an example of a pool closely spaced, and yet wells drilled in the later life of the field have produced appreciable quantities of oil.

In pools where close spacing is necessary to win a high ultimate recovery, it may be uneconomical to follow the practice of close spacing, thereby forcing the operator to adopt a program of wider spacing to obtain a profitable outcome. The price of oil has much to do with insuring a profit when adopting close spacing.

Extensive studies made some years ago by engineers of the United States Bureau of Mines indicated that the recovery of oil varies approximately as the distance that the oil has to move in reaching the well; in other words, the ultimate recovery per acre of given acreage varies inversely as the square root of the number of acres assigned to each well.[1] On this assumption, the recovery per acre with 40-acre spacing would be one-half that obtainable when spacing is on basis of 10 acres per well. If economics are disregarded, it is believed in many quarters that closer spacing results in higher recovery per acre, and this theory seems to be substantiated by the statistics prepared by the engineers of the Bureau of Mines at a time when bias of one kind or another did not enter into the question. Since the Bureau of Mines has established this theory tentatively, for approximate calculations, we may be fairly justified in assuming, until better evidence is obtained, that ultimate recovery varies inversely as the square root of the number of acres per well. If, in the course of time, it is definitely found that this relation should be modified for some pools, or for all pools, it should then be changed to correspond with the newly acquired data. It should be noted, however, that Cutler's formula is not based on a theory as to the energy required to move the oil, but on actual observations on a large number of wells, and the results as stated are a result of these observations. Revision of this formula, if such be made, should be based on similar observations, and not merely on theory.

During periods of curtailed production, some agreement should be made for establishing equitable withdrawals. This would in most cases be more easily settled if uniform spacing were decided upon at the beginning of the development of the field.

So far as possible, where uniform spacing is impracticable, allowables should be set up in such a way that the recoverable oil from one tract of land in the reservoir will be extracted during the same period that the recoverable oil from a tract with different spacing is removed. If this is not done, the tract where the allowed production is set up at too high a rate will become an area of lower pressure, and will tend to draw oil from the neighboring tract.

If a given spacing has been agreed upon, and yet the owner of a lease desires to drill at wider spacing, he has that privilege, and during periods of restriction should probably be allowed to produce at a rate dependent on the lower recovery per acre expected from the wider spacing program. But if the wells are to be produced at maximum capacity, by the very nature of the conditions, he must be content with the recovery of a smaller quantity per acre than his neighbor, and he cannot fairly insist that his neighbor reduce his withdrawals to correspond to the withdrawals of the acreage with wider spacing. He has elected to spend less money on drilling and must be content with the recovery of less oil per acre.

It is believed by many that wider spacing results in lower recovery per acre although more oil per well, and if this be true, the operator with wider spacing is not entitled to the recovery of as much oil per acre as the operator of wells closely spaced. More than this, if the owner of a well decides for any reason to produce at a lower rate than that at which he is entitled to produce, he cannot complain if he recovers less oil per acre; or, if he drills and produces his oil in an inefficient manner, thus resulting in being unable to produce at the allowable rate, he should not complain if his neighbor produces at the higher allowable rate, even though inequitable withdrawals take place.

Methods Employed for Establishing Daily Allowables When Curtailing Operations

Much attention has been given recently to the methods of establishing daily allowables when operating under curtailed schedules. Differences of opinion exist as to the best and most expedient method for setting up well allowables, as is indicated by the diversity in methods that have been adopted in the various states in which proration is in force. Moreover, these methods are in a state of flux, and change from time to time as different ideas are advanced.

Some of these methods involve most complicated formulas, requiring large clerical forces to work out the various schedules, and some are such that it is practically impossible for an operator to determine in a simple manner just what his allowable should be. The introduction of well-spacing, well-potential, bottom-hole pressure, porosity, gas/oil ratio and perhaps other factors into these formulas have complicated the matter to such an extent that an operator does not know whether or not he is being allowed equitable withdrawals, and in some of the formulas the factors are so debatable as to their influence and fairness that the operator is bewildered.

It would seem more nearly applicable if a method, or formula, could be adopted that would reduce the application of the formula to the simplest terms possible, and would indicate to the operator that he is being treated fairly. Some of the formulas in use work out so that some wells are given allowables they cannot possibly make, which would seem to indicate an absurdity in the introduction of certain factors in the formulas or in the way they are handled.

After all, no matter what be the allowable assigned to a given acreage, the oil must be produced through the well drilled on that acreage, and the allowable should depend upon the capacity of that well to produce it.

Some methods for establishing allowables which depend on assigning a certain portion of the allowable to the field to acreage, another portion to potential, and other portions to bottom-hole pressure, gas/oil ratio, etc., do not appear to result in equitable withdrawals. For instance, allowables assigned to acreage alone in a poor well may be more than the well can actually make. Assigning allowables to bottom-hole reservoir pressures may be far from indicating what a well

can actually make, since production is dependent on flowing pressure rather than on static pressure, and flowing pressures depend greatly on permeability. After all is said, the attempt to use pressure as a factor is just another way of endeavoring to interpret productive capacity in terms of pressure. Therefore, the use of pressure together with potential is a duplication of a given factor, assuming that pressure could be used in a proper manner. An improper manner would have no justification at all for its use. Sometimes static reservoir pressures are assumed to be a measure of the energy that exists in the vicinity of a well, but this assumption is subject to fallacies, inasmuch as static pressure may be dependent solely on a standing water condition and where no oil whatever can be produced, or the permeability might be such that only a trickle of fluid could make its way into the well even with a very high pressure behind it.

Observations of bottom-hole pressures will meet with great variations, depending on the manner in which the well has been produced previous to taking the pressure observation; on the position in the reservoir, whether high or low on the structure; and on the time given for the reservoir pressure to establish itself.

Observations of flowing pressures in tight formations will lead to surprises. In one well in the Turner Valley field, Canada, at depth of 8300 feet the bottom-hole pressure at the end of 24 hours was 1660 pounds per square inch, and at the end of the fourteenth day it was 2525 pounds. It was still increasing slightly at the end of that period. In another well at depth of 8200 feet, the closed-in pressure at the end of 24 hours was 1585 pounds per square inch, and by the end of the fourth day it was 2485 pounds. When opened to production, the flowing pressure at the end of 7 hours had declined from 2485 pounds to 555 pounds.

Under such circumstances it is pertinent to inquire at what point was the pressure of such significance that it could enter into a formula with any degree of assurance that it was the proper point at which to use it. As a matter of fact, the only points at which the reservoir pressure has any significance are when it has reached equilibrium after being shut in, or when it has declined to the lowest point of flowing pressure. In other words, the use of any of the pressures in the Turner Valley field are so indeterminate that it is not representative of anything having a definite meaning so far as obtaining equitable withdrawals is concerned.

It seems probable that most operators are willing to assume that acreage should be introduced as a factor for establishing allowables if the spacing employed is not uniform. Also, most operators seem to believe that the capacity of the well to produce should be introduced as a factor, since the potential is the most important factor, perhaps the only factor, that indicates what the well will produce. If now, we multiply these two factors together, that is the factor for acreage, and the factor for potential, we have a reasonably simple formula that is probably more nearly indicative of the capacity of the given acreage to produce, both at the present time and ultimately, than any other formula that has been proposed. If uniform spacing is employed, there remains only the potential factor to consider.

WELL	Acres Well	Square Root of Acreage	Potential Barrels Per Day	Well Factor	Daily Allowable Based On		
					Acreage and Potential	Acreage Only	Potential Only
A	36	6	500	6x500=3,000	97.4	128	78
B	25	5	700	5x700=3,500	113.6	89	109
C	9	3	400	3x400=1,200	39.0	32	62
Sum	70	..	1,600	7,700	250	249	249

Suggested Method for Allocating Daily Production

Assuming that it is acceptable to use the approximate formula of the engineers of the Bureau of Mines as the influence of spacing on ultimate recovery, and the potential of the well as the capacity of the well to produce, the process of arriving at the daily allowable would be to calculate the square root of the acreage allotted to each well and multiply this factor by the 24-hour potential of the well, thus arriving at the well factor. The barrels allotted to the field as a whole would be multiplied by the well factor, and divided by the sum of all the well factors, thus arriving at the daily allowable for each well. The formula would be as follows:

$$WA = \frac{A \times (RxP)}{S\ (RxP)}$$

in which formula,

WA is the daily well allowable.

A is the allotment to the field.

R is the square root of the acreage assigned to each well.

P is the potential of each well.

S (RxP) is the sum of all the well factors.

An example will serve to illustrate the calculations for a field with wells A, B and C, with well spacing and potentials as given, in which the field is given an allotment of 250 barrels per day. If the daily allocation for the three wells is, for example, 250 barrels per day, the allowable for well A is:

$$\frac{250 \times 3{,}000}{7{,}700} = 97.4 \text{ barrels per day.}$$

If legislative enactment has provided for a minimum allowable per well, the total minimum production for all wells could be subtracted from the total allotment for the field, and the remainder handled in the manner suggested in the formula, and added to the minimum allowable.

If wells produce excessive quantities of gas, it does not seem logical to attempt to incorporate this in a formula, since it disturbs the equitable withdrawal effect of the formula. It would seem as if this could be handled on the basis of an arbitrary penalty, dependent on the excess of the gas/oil ratio above some agreed upon reasonable ratio for the field. At best it will have to be an arbitrary penalty, or attempt at equalization.

In the opinion of the writer, the reduction in reservoir pressure caused by withdrawals of oil and gas is not so objectionable in its effects on ultimate recovery as many appear to believe to be the case.

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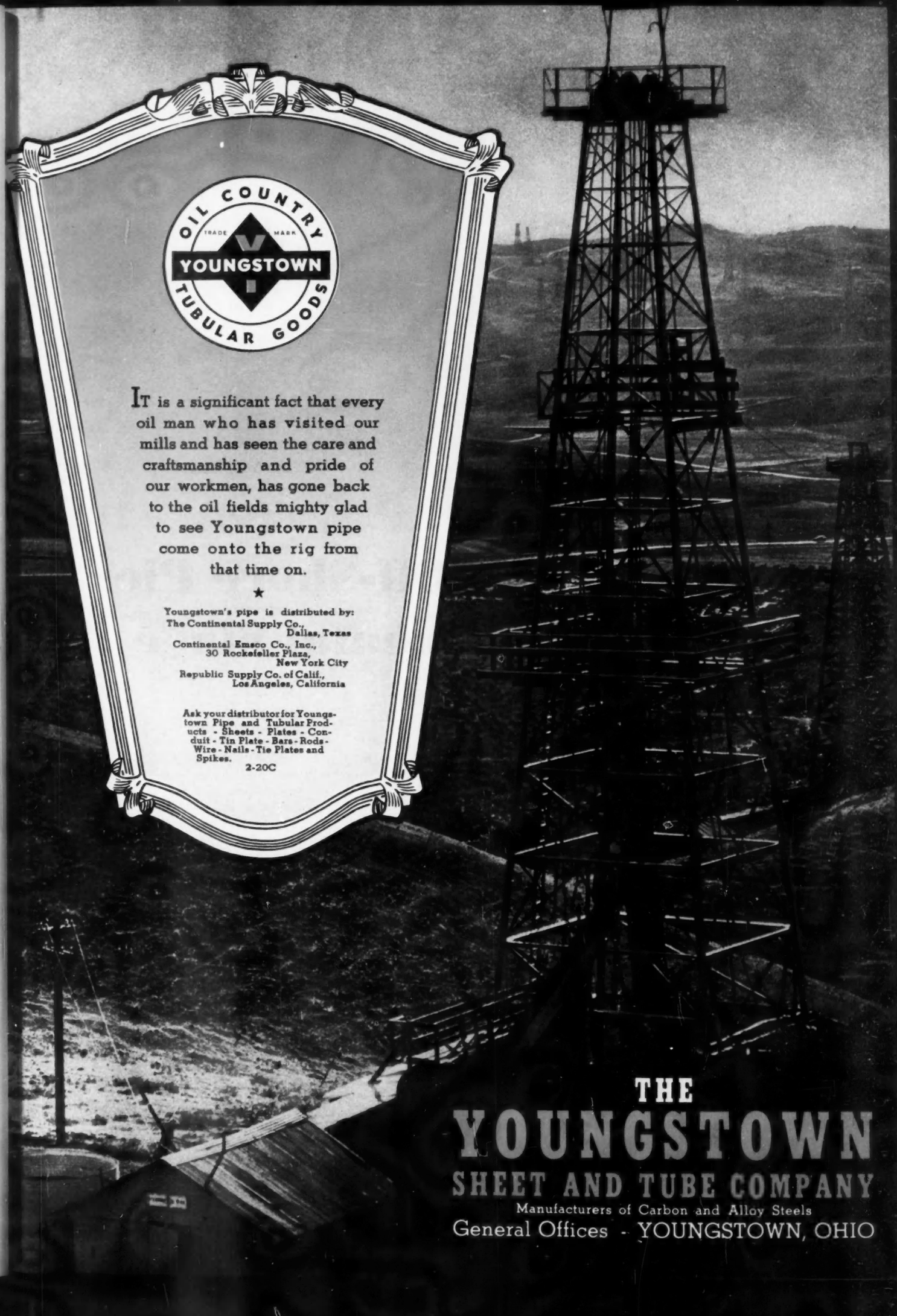
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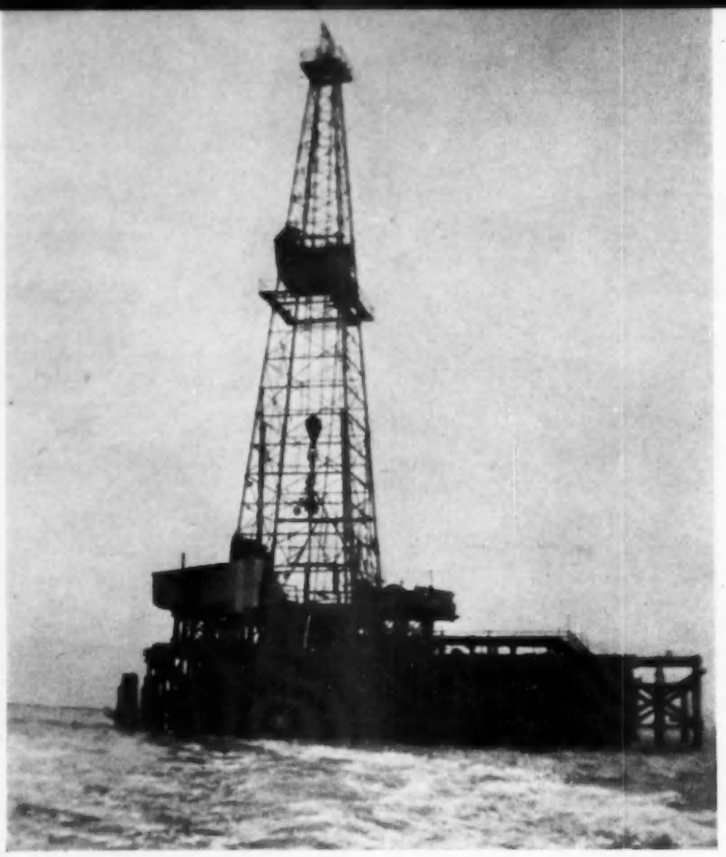


Drilling from Off-Shore Pier Past Experimental Stage

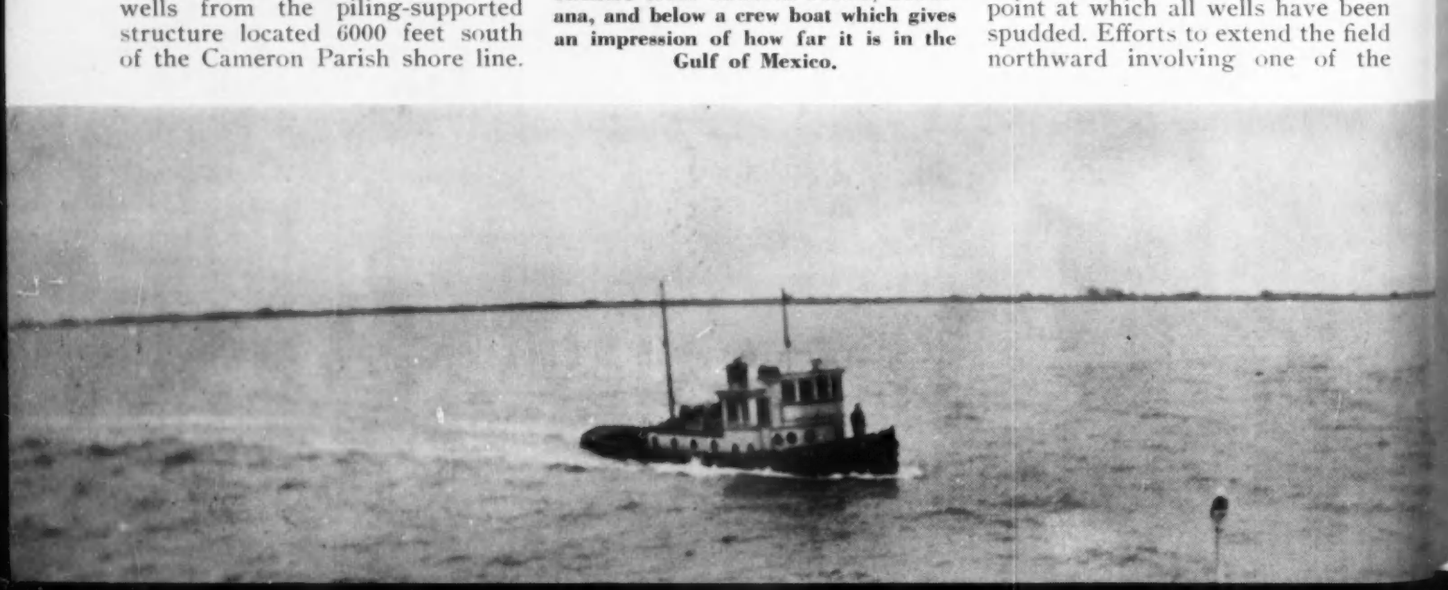
By R. H. TATE

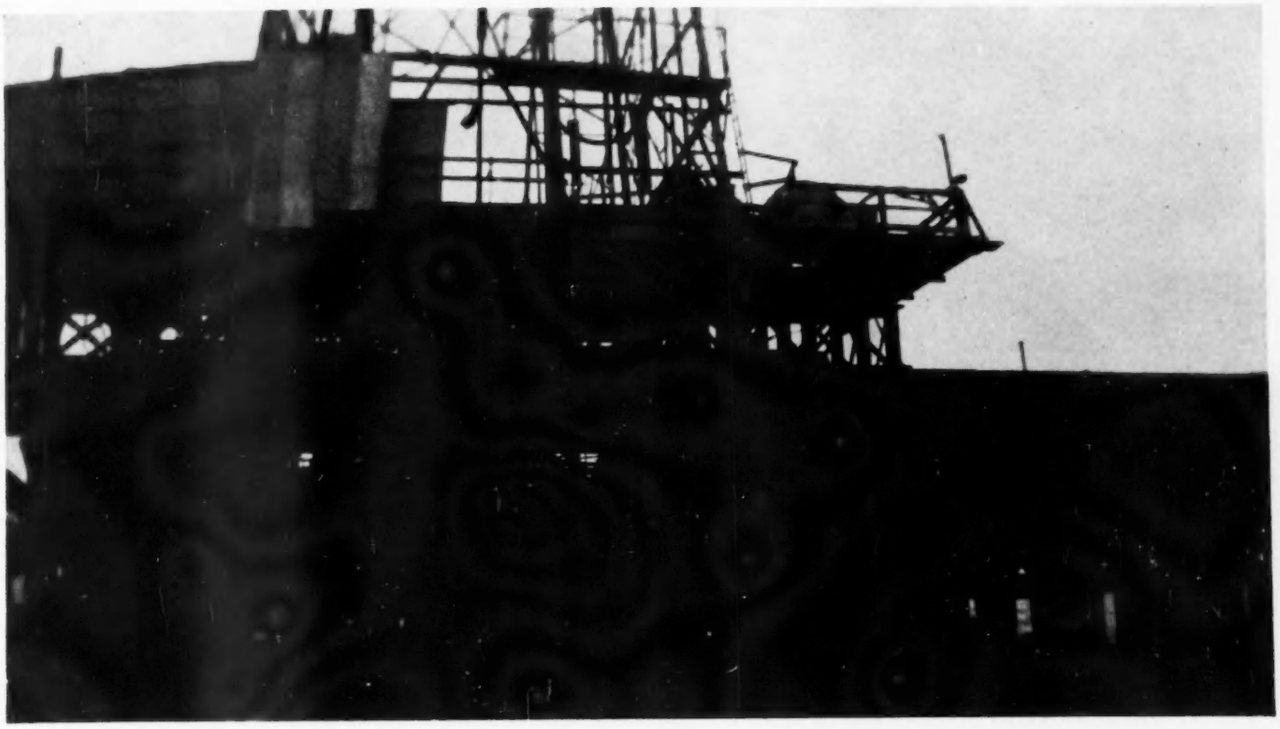
TWO years of operations, during which time nine wells have been drilled to completion, have brought to Superior Oil Company, operating jointly with The Pure Oil Company, a wide variety of experiences and problems in the Creole field off the coast of South Louisiana in the Gulf of Mexico.

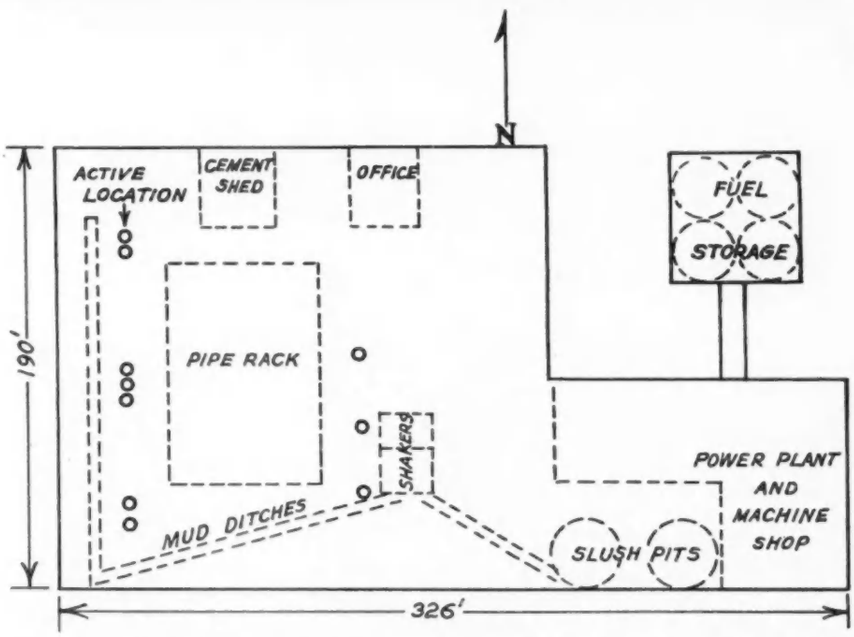
Original plans for the undertaking contemplated drilling only four wells from the piling-supported structure located 6000 feet south of the Cameron Parish shore line. Already nine have been completed, one is now drilling and tentative plans for four additional holes have been laid. Just what further steps will be taken when State 14 has been turned into the tanks is not, of course, a subject on which definite decision has been made. However, it is not unlikely that a duplicate of the set-up from which operations are at present carried on will be constructed at some other point in the field.

At top is the current drilling operation offshore from Cameron Parish, Louisiana, and below a crew boat which gives an impression of how far it is in the Gulf of Mexico.

Superior Oil Company representatives in active charge of operations estimate that development so far encompasses approximately 600 surface acres, largely a fan shaped area west, south and east of the point at which all wells have been spudded. Efforts to extend the field northward involving one of the







Detail view of substructure and, at left, a plan of the pier. Note that piling and bracing timbers are so numerous that light does not penetrate from one side to the other.

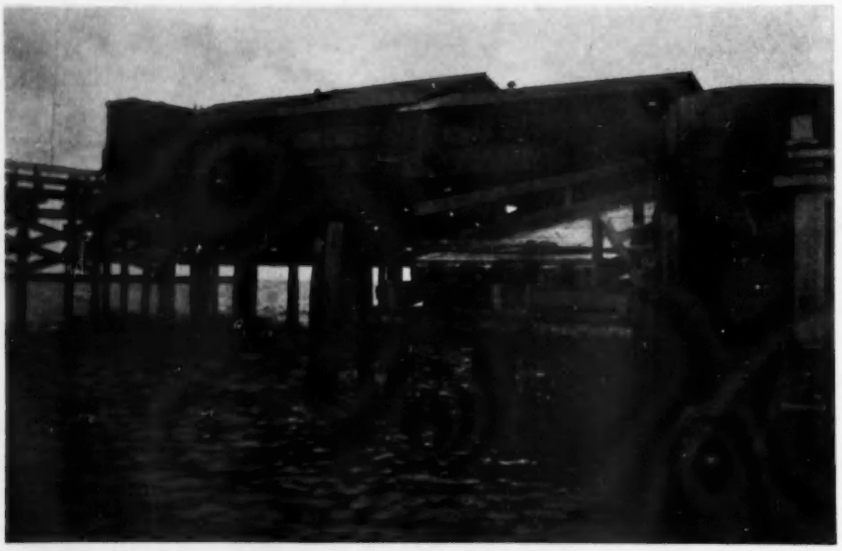
marine wells and four land operations have met with little success and it is probable that all future extensions for the field will be as a result of a continuation of the marine drilling that is without exact duplicate in South Louisiana.

Today the structure on which Superior Oil Company's work is carried forward is supported by approximately 550 basic creosoted pilings averaging 60 feet in length. The criss-crossed network of bracing timbers supplementing this foundation are too numerous to count offhand, but only once since the company originally set up here has the main structure been threatened. In view of the exposed location and the frequent buffeting received by wind and wave this in itself is a tribute to the ability of the construction to "take it," and to the ingenuity of the designers. Strangely, the shifting of sands caused by tides and waves in most marine areas has been no source of trouble here. Despite the distance from shore, they are operating in only 14 feet of water.

Perhaps the outstanding feature of the operations at Creole has been the directional drilling involved. The area has been a veritable testing ground for this method and as a result a number of important revelations pertaining to the practice have been made. Principal among these has been that while directional drilling is at times invaluable, it will never be practiced generally on shore operations as a means by which the expense of rigging up new locations within a restricted area can be avoided. In short, where practical, it is cheaper and generally more satisfactory to tear down one location and move equipment to another than drilling several holes from one central point.

Difficulties of Directional Drilling

The wear and tear on equipment, principally drill pipe, is tremendous and the more radical the deflection from vertical the greater the wear. Fishing jobs, when necessary, also become a thousandfold more complicated than in vertical holes. In fact, most of the various proce-



The shed which houses the Diesel power plant is shown in the background of this picture. This structure also houses the machine shop which is equipped to make all minor repairs to equipment. The runway in the foreground is where barges unload pipe and equipment.

dures involved in routine drilling become more difficult in a directional hole.

It is also clearly seen in this marine job that because of the necessity for steel slush pits and wooden ditches better mud control has become a more simple matter. This is probably generally recognized by the industry as a whole but the practice of employing earthen pits and ditches prevails generally except where in such cases as the Creole operation the improved method is forced upon the operator. Fine meshed vibrators or screens further render Superior Oil Company's mud control an example worthy of emulation under all conditions.

Cheaper Than Causeway

It also has been proven that the chosen method of developing the field here has been cheaper than construction of a boardwalk system out from the shore. This is true despite the small flotilla that must be maintained under constant charter. The problem prior to the proof was highly debated and questioned by many other operators facing similar conditions in the marsh regions and inland marine areas. The construction and maintenance of the mile-long walkway system that was decided against would have entailed great expense, and in view of the violent weather that prevails here much of the time would almost certainly not have served the purpose.

The operators' fleet consists of two tugs, the Bobby Williams and the LaSalle, as well as a barge for hauling pipe and any other heavy equipment. The two tugs carry the lighter burdens that from time to time must be transported to and from the job as well as acting as crew boats. Perhaps the only one not entirely satisfied with the isolated base for operations now in use here are the members of the crew who must spend an hour and a half going out and another hour and a half coming in on their own time. The distance traversed is about a 28-mile round trip.

The rig is Diesel powered and a battery of four tanks have been erected off the main structure for fuel storage. A small but efficient machine shop is maintained for minor repairs that become necessary and as a result time is seldom lost because of shut downs while repairs are made on equipment at land machine shops.

Protection Against Blowouts

Due to the location of the operations here the possibility of a blowout has been considered, and should a well ever contrive to get away in spite of precautions taken, the operators have already given some thought to ultimate capping and controlling of the well. The size of the structure makes it most improbable that the entire supporting platform would be affected by such a blowout even should it catch fire. Another rig would be set up on the end opposite that from which the blow out occurred, and another directional hole dug until it contacted the hole from which the blow emanated and from there it could be handled in several routine ways.

However, as an additional precaution, the operators have installed storm chokes in all wells completed. Should the Christmas

Completed wells are enclosed by railings, the two in the view below indicating how closely the wells are spaced. Flow from the wells is by pipe line to shore, where it is picked up by barges on the intercoastal canal.

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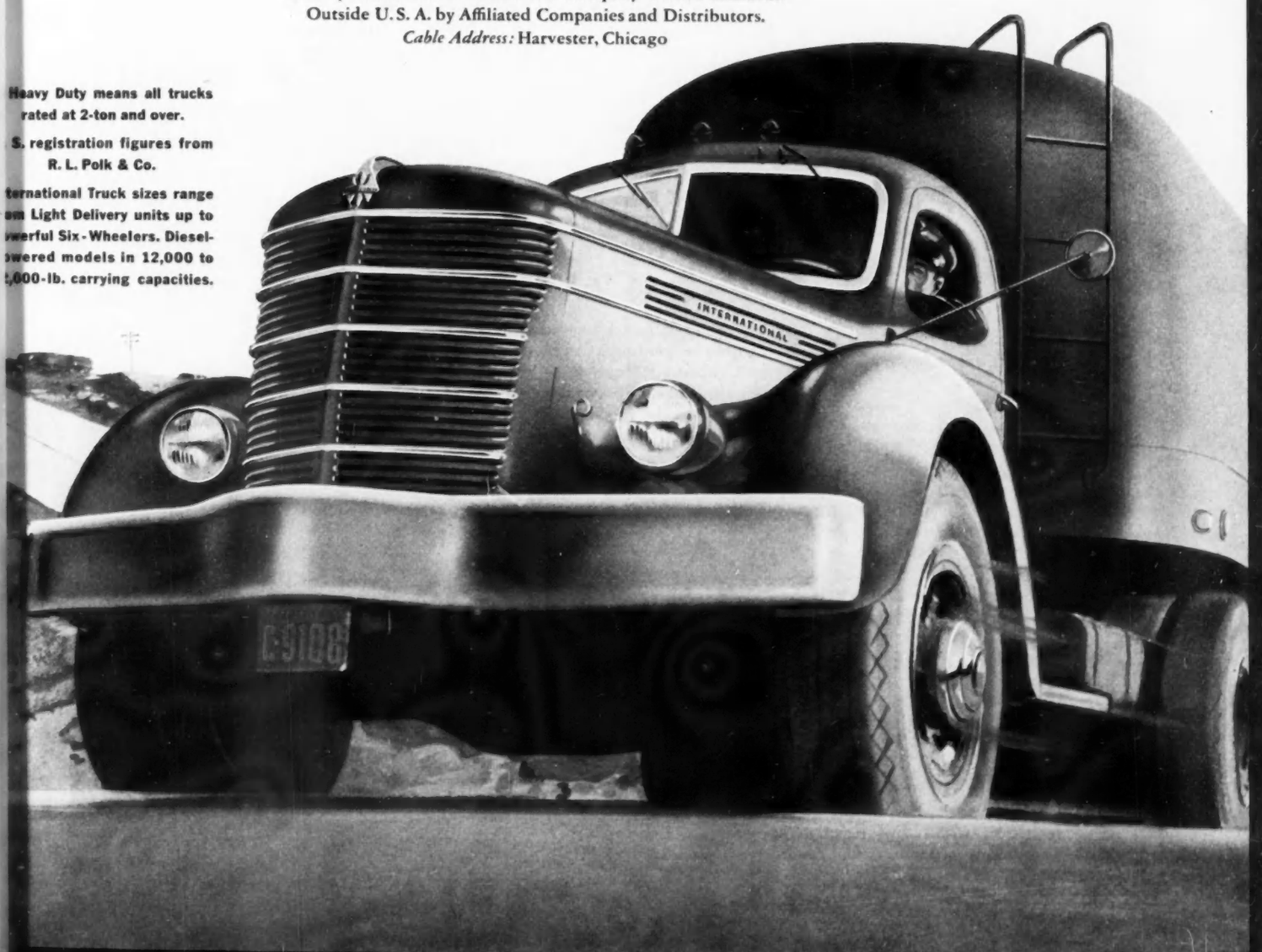
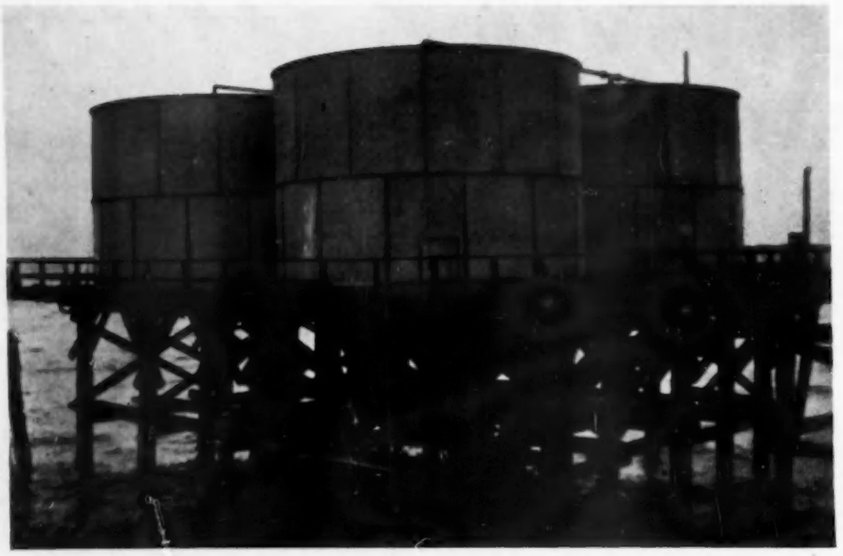


INTERNATIONAL TRUCKS



Four 1000-barrel tanks contain the Diesel fuel supply. These tanks are on a special pier removed from the main structure, as shown in sketch on page 21.

tree be knocked off by falling timbers or high seas (the major threat here), the chokes are installed so that any sudden and violet increase in pressure such as that caused by removal or loosening of the surface controls the valves would close in at the point of installation, about 2000 feet in each well. This, in addition to the normal safety factors employed in all areas today, makes it practically impossible for a blowout to occur.

Cementing and Electrical Log Units Barged Out

One of the major problems encountered here is in servicing wells by perforating, cement and electrical logging trucks. The method employed is not the most satisfactory, but under existing conditions is the only alternative. The trucks are loaded on the tender barge and towed out to the job. No attempt is made, though, to remove them from the barge, all functions being performed satisfactorily enough from the barge in mild weather. The objectionable feature arises when the frequent gusty spells of weather prevail. When the gulf becomes rough the cement job, or the perforating job, must wait until more suitable conditions exist. This frequently causes considerable delay.

Production from the field here was first barged out but since this method of disposal was dispensed with, oil has been run out through a pipe line from rig to shore and thence overland to The Pure Oil Company's terminal on the Intercoastal Canal, to be barged out.

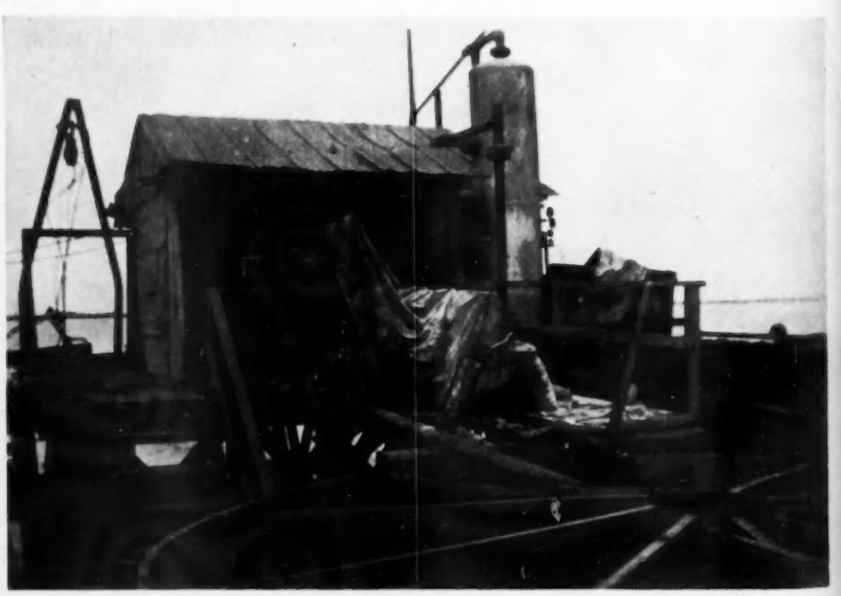
The present overall dimensions of the base is approximately 326 feet in length and 190 feet in width. With four more locations possible in this area, no extension of the present facilities is likely to be made. Spudding points of the wells drilled so far vary from a maximum of about 30 feet apart to a minimum of 10 feet apart. It is obvious that the limitations imposed upon ultimate development here are those resulting from spacing problems at the producing depths and not a matter to be affected by surface crowding.

Experimenting Over

The experimental phase of the operation is, temporarily at least, past, and rigging, spudding and completion of wells is effected with routine precision. The only major interruption of this routine in months has been that caused by a 50-mile gale that swept the Louisiana coastal country several months ago. At this time the Diesel equipment, shed and supporting structure were destroyed. That is, all but the power plants themselves were destroyed, the latter being precipitated into the Gulf of Mexico, necessitating a salvage job supervised by marine divers. Final recovery of equipment was effected and all units barged out for major repairs. By the time they were in running order, the sub structure had been rebuilt and operations were resumed. This constitutes the only major threat to operations here, and barring recurrences, the even tempo of the routine will probably not be disturbed again.

★

The view at bottom shows part of one of the two mud tanks in the foreground, and cement storage shed behind. Mud handline installations are an important phase of this operation. Ditches from the tanks are indicated on the sketch.



S.A.E. X-3140 GIVES DRILL COLLARS MORE STRENGTH

Strings of drill pipe weighing many tons force bits ever deeper, driving relentlessly through drill collars such as this one in the Los Angeles shops of the Emsco Derrick and Equipment Co. Literally hung by threads, highly stressed drill collars must withstand tearing torque of high speed rotaries, crushing weight of as much as 15,000 feet of pipe and fatigue stresses of a high order. That's why Emsco engineers specify SAE-X3140 Nickel-Chromium steel for tougher, stronger collars.

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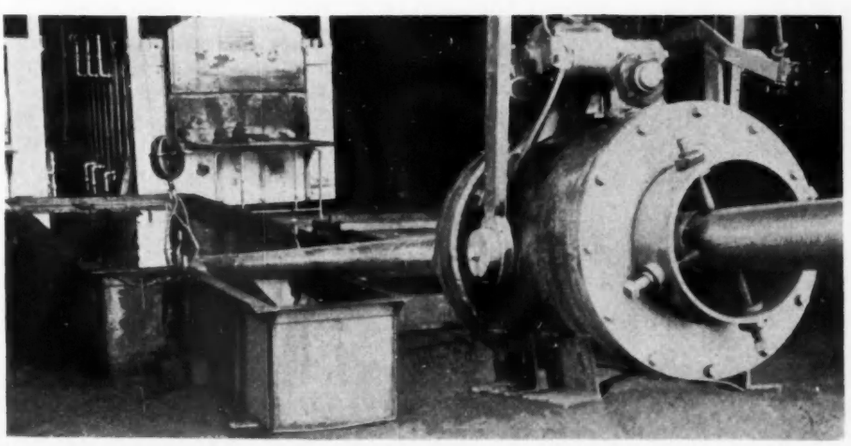

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NOTWITHSTANDING the enormous amount of general discussion of the oil industry and its production control and proration problems, not only within the industry itself but among politicians and others with even less direct concern in its affairs, there is available to those engaging in this discussion very little information bearing upon just what companies own this production and where it is situated. With a view to discovering these facts for the State of Texas, the writer made a complete analysis of the Texas Railroad Commission's proration bulletins for January, 1939, and has just completed a similar study of these bulletins for January, 1940. Some very interesting facts are developed through a comparison of some of the figures developed in these analyses.

Big Companies Still Far From Monopoly In Texas Production

21 companies produce 51.7 percent of the oil but number of smaller producers is increasing

By ALEXANDER B. MORRIS

WHEREAS 21 large companies produced 49.3 percent of Texas' total daily allowable production during January, 1939, these same companies in January, 1940, had boosted their percentage to 51.7 percent. The average daily allowable for these companies rose from 23.5 barrels to 29.4 barrels, an increase of 25 percent. All other operators in the state showed an average daily allowable per well of 17.9 barrels in January, 1939, and this rose to 20.0 barrels in January, 1940, an increase of 12 percent. Table 1 shows comparative figures for the 21 large companies.

Professional "viewers with alarm" will not fail to point out as a most unwholesome condition that 21 operators, or less than 0.7 percent of the total operators in the state, actually operate about half of the total production. Far from being a sign of centralized control, this very fact is clearly indicative of the almost complete absence of monopoly, at least in respect to production of crude. The names in this list of 21 companies includes all the majors so often reputed to hold the industry in a vise.

But exanimation of the alphabetical list of operators will reveal there are several independent operators controlling daily allowable production greater than that of many of the majors. Table 2 has been prepared to indicate the extent of this condition. In it is shown the numerical distribution of listed operators within different daily allowable limits. In January, 1940, there were 19 operators with a daily allowable between 10,000 and 50,000 barrels. Table 1 shows only 13 majors in that group, indicating there are 6 independents in that group alone. In the 5000- to 10,000-barrel group, Table 2 shows 19 operators, only one of whom appears in Table 1. Economists state as a sort of ready rule-of-thumb, that an uncontrolled 10 percent of a commodity is sufficient, generally, to break the effective operation of a monopoly in that commodity. With crude production in Texas, even under a ridiculous assumption that all major companies act in con-

TABLE 1
Allowable Production Owned by 21 Larger Companies in Texas, 1939 to 1940

COMPANY	JANUARY, 1939			JANUARY, 1940		
	Leases	Wells	Daily Allowable	Leases	Wells	Daily Allowable
Amerada	111	525	11,914	114	600	17,097
Atlantic	241	1,913	44,243	245	1,876	60,985
Barnadall	39	246	8,901	42	305	12,438
Cities Service	66	692	12,012	79	760	17,189
Continental	177	1,150	17,696	176	1,146	21,376
Gulf	359	3,817	95,720	361	3,974	135,800
Humble	889	6,249	182,975	944	6,662	234,475
Magnolia	562	4,851	80,309	554	4,902	97,517
Mid-Continent	25	110	3,142	29	127	3,907
Ohio	88	984	29,812	85	993	37,628
Phillips	167	880	19,372	187	924	26,271
Pure	175	802	18,897	176	938	25,924
Shell	226	1,600	39,101	257	1,783	57,331
Sinclair-Prairie	231	1,903	36,352	224	2,020	45,775
Skelly	93	460	12,065	91	499	16,081
Standard Oil of Texas	68	434	10,860	67	426	22,059
Stanolind	404	2,725	81,144	435	2,893	99,695
Sun	202	1,587	38,386	206	1,592	47,006
Texas	442	3,288	66,230	425	3,309	74,050
Texas-Pacific Coal & Oil	73	565	8,844	80	580	10,875
Tide Water Associated	181	1,464	36,431	187	1,493	48,242
Total	4,819	36,245	854,406	4,964	37,802	1,111,721
All others	.....	49,071	878,721	.....	52,070	1,040,164
Grand Total	.....	85,316	1,733,127	.....	89,872	2,151,885

Total operating units: 1939, 3,436; 1940, 3,553.

The above production figures do not represent actual production, being taken from allowable quotas and no attempt has been made to figure actual output. The latter would be considerably smaller, due to Texas' practice of requiring all wells to be shut in two days each week during the two months analyzed. For statistical study, the allowable figures were considered sufficiently indicative of the relationship.

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PAGES 303 TO 322

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TABLE 2
Number of Operators in Texas and Their Gross Daily Allowable Rating

DAILY ALLOWABLE	January, 1939	January, 1940
In excess of 200,000 barrels	0	1
100,000 to 200,000	1	1
50,000 to 100,000	4	5
10,000 to 50,000	18	19
5,000 to 10,000	18	19
1,000 to 5,000	153	202
Less than 1,000	3,342	3,306
Grand Total	3,436	3,553

cert, there is an uncontrolled volume of about 50 percent of the total. A large part of this in the hands of strong independents.

Still Room for Small Operators

The complaint is often voiced that the oil business used to be a small operators' game, but that now it is only for the big companies. Figures would seem to directly contradict this statement. In Texas alone there are 3306 separate operating entities each having less than 1000 barrels per day, and while that is fairly large production for a "small" operator, at least two-thirds of these have less than 100 barrels, which is small enough for anyone.

The small operator is definitely not on his way out. During 1939 he held his own remarkably well, and even improved his position, as indicated by the great increase in the number included in the 1000- to 5000-barrel group in Table 2. This increase resulted from a general increase in the average daily allowable, and thus pushed up into the second group a considerable number of the higher members of the smallest group in 1939. About 50 small operators were thus affected, whereas only two moved from the 5000- to 10,000-barrel group into the 10,000- to 50,000-barrel group and only one moved from the 10,000- to 50,000-barrel group into the 50,000- to 100,000-barrel group.

East Texas is still the state's sore spot. The Texas Railroad Commission has accomplished excellent results in cutting off dead wells both there and elsewhere in the state, and reducing the reported allowable for small strippers to their actual production capacity when less than the legal margin of 20 barrels. This action released many thousands of barrels for allocation to other localities. That little more is to be expected from such activities, however, is clearly shown in Table 3, listing 21 stripper areas or fields for January, 1939, and January, 1940, and showing the number of producing wells and the daily allowable in each. Out of 24,119 wells listed in 1939, 443 are now classed as dead.

Average Production Down

Average production per well decreased during the year from 3.98 barrels to 3.69 barrels partly due to normal decline and partly due to the efforts of the commission in making well allocations in accord with productive capacity. Based on 1940 figures, plugging of all these wells would provide for use elsewhere only 87,516 barrels per day, equivalent to about 4300 news wells or an increase of a little over one barrel per day in the allowable of the other 66,196 wells in the state. In East Texas there are at least 5000 wells that should be closed in by any reasonable standard of operation, having a daily allowable in excess of 125,000 barrels under the late ruling.

East Texas In Saddle

Over 100 counties in the state are productive of oil. How much longer are state representatives from most of these counties going to be done in the eye by the representatives from the five or six counties most deeply concerned with the wide open operation of the East Texas field and in the defeat of adequate production control there?

The foregoing statistical facts regarding crude oil production ownership distribution in the State of Texas was obtained by a complete analysis of the Texas Railroad Commission's proration bulletins for January, 1939 and 1940. The method used was as follows: The 1939 study was made by cutting up a set of bulletins, a separate slip being cut out for each listed operator's holdings in each field. These slips were sorted, alphabetically arranged by operators, and the slips for each operator pasted on cards, alphabetically by fields. From these cards the list was typed, showing for each operator the fields in which he operated, and for each field the number of leases, number of wells and the daily allowable. The 1940 analysis was started by typing cards for all the operators appearing on the 1939 list, with the names of the fields in which they operated in 1939. Then the January, 1940, proration bulletins were posted to these cards, showing for each field the number of leases, wells and amount of daily allowable. New operators whose names did not appear in the 1939 list were provided with cards, and after all the posting was complete, all dead cards were removed. Five hundred and twenty-five dead cards were thus removed, and as the total number of listings had increased from 3436 in January, 1939, to 3553 in January, 1940, it was necessary to insert 642 new cards.

This represents a very high degree of activity involving approximately 15 percent of the total number of listed units in either period. The greatest change appears in the nearly-depleted pools of North Central Texas. There was a distinct tendency toward accumulation of these spent properties by substantial small operators, acquisitions coming both from still smaller operating units and from former holdings of large companies. Not all of the indicated activity represented actual change of control, however. Probably 1/3 to ½ of the changes were occasioned by reorganization from individual holdings to corporations under the same original control, and from the dissolution of corporations and distribution of their assets to the former stockholders. A number of partnerships were also dissolved, but some of these cases should be ranked as actual trades as one partner bought out the interest of the other.

TABLE 3
Fewer Stripper Wells on Texas Proration Schedule

FIELD OR AREA	January, 1939		January, 1940	
	Wells	Daily Allowable	Wells	Daily Allowable
Archer Co.	3,832	12,710	3,724	11,909
Brown Co.	941	2,142	907	2,023
Callahan Co.	1,207	1,450	1,177	1,366
Clay Co.	476	607	497	670
Coleman Co.	349	1,239	337	1,207
Comanche Co.	81	157	101	449
Cooke Co.	528	2,515	537	2,570
Corsicana	646	427	622	404
Eastland Co.	496	3,061	471	2,829
Jack Co., North	137	257	158	388
Jack Co., South	545	8,343	442	3,596
Mexia	264	1,950	241	1,721
Montague Co.	796	4,241	805	5,095
Palo Pinto Co.	145	369	150	514
Shackelford Co.	1,809	7,727	1,878	6,264
Somerset	923	665	809	591
Stephens Co.	631	4,455	619	4,206
Throckmorton Co.	132	399	144	425
Wichita Co.	6,268	17,358	6,243	18,568
Wilbarger Co.	1,634	11,154	1,648	12,211
Young Co.	2,284	14,898	2,166	10,510
Total	24,119	96,124	23,676	87,516
Average per well	.....	3.98	.....	3.69
Percent of State total	28.3	5.54	26.3	4.07

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Three-legged supports span the ditch, lower line intermittently as operations prepare pipe and unitize sections. Pipe is hung from hoist swung from top center of tripod. Operator manually controls level of line in conformity with rest of lowering equipment.

Capacity of World's Largest Gas Line Being Increased

By FRANK B. TAYLOR, Staff Writer

ADDITIONAL loops and new equipment are being added to Panhandle Eastern Pipe Line Company's main-line transmission system to increase daily capacity. The expansion program, estimated to cost about $3,500,000, includes installation of an additional 1000-horsepower compressor unit in the firm's Glenarm, Illinois, station and additional equipment at the existing gasoline and dehydration plant at Liberal station, Kansas. It is at this point that the two main gathering systems, that from Texas and the other from the Hugoton area, find their point of junction. With completion of the work, the firm will be able to transport from 25,000,000 to 30,000,000 cubic feet greater gas volume.

In all, 137 miles of loops to 24-inch and 22-inch main line were found required to satisfy increasing volume demand. This called for 25,000 tons of steel, an order that was shared in by two mills. Construction contract awards were made to T. R. Jones and I. C. Little, both of Dallas. Jones was awarded the work in Kansas, while eastern work was awarded to Little. Sub-contractors were employed for stringing and other work of an auxiliary nature. H. C. Price, Inc., Bartlesville, was awarded welding work on both western and eastern divisions.

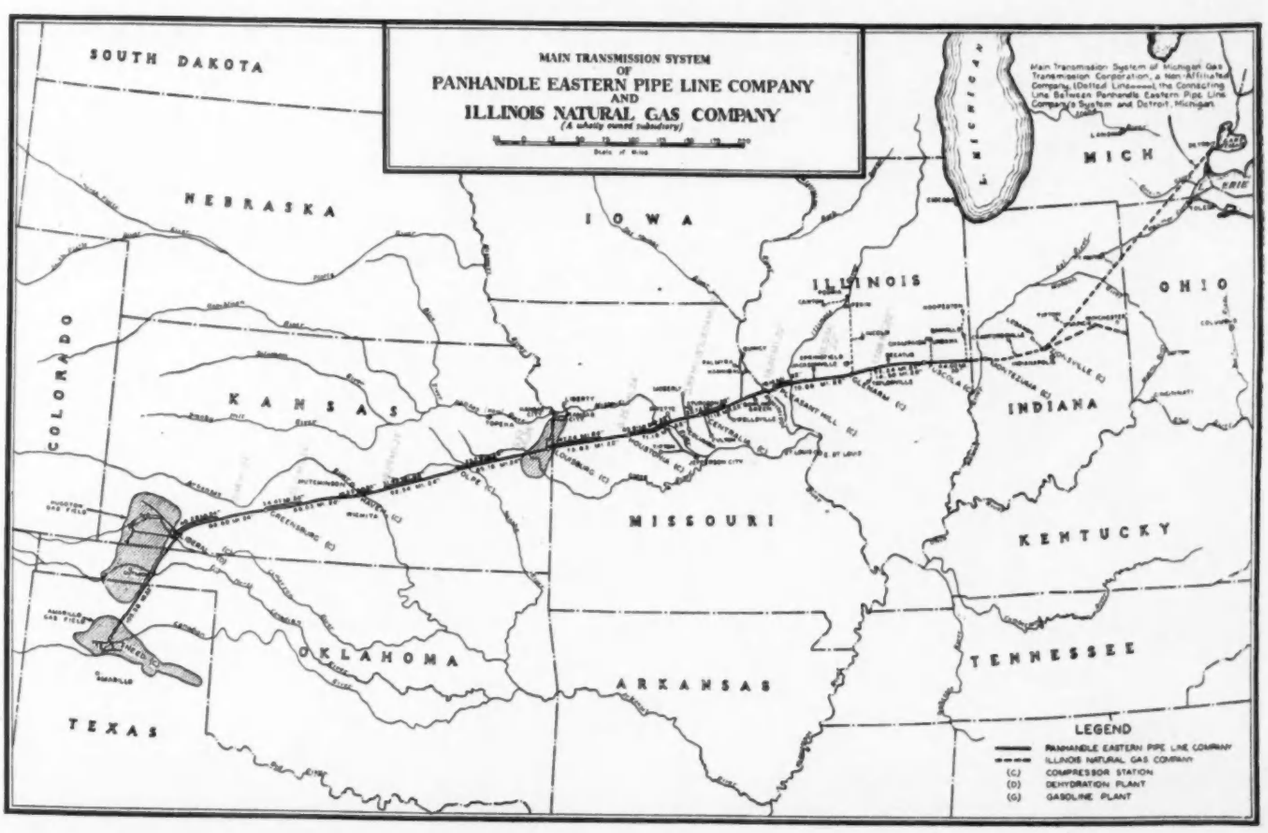
When the loops have been placed in service, capacity of the line will approximate 235,000,000 cubic feet per day. While there may be few

Creeping up the right-of-way on treads, two ditching machines were equal to severe conditions encountered during snows and unusually cold weather.

days when such a volume is required, it is nevertheless an obligation of the firm to have available sufficient capacity to meet extreme demands. Average daily transmitted volumes fall far below maximum capacity.

The present looping program provides a total of 421 miles of line looped. Prior to the present program, expansion work added 284 miles in loops to the system. With 857 miles in Panhandle Eastern Pipe Line Company's main line from Texas to Indiana, loops so far constructed and authorized have resulted in doubling the main line over about 50 percent of its length. This consideration does not include 268 miles of main line between the end of Panhandle Eastern Pipe Line Company's transmission artery at the Indiana State line and the final terminal at Detroit. This eastern section is the main tranmission system of Michigan Gas Transmission Corporation, a non-affiliated company. Considering the combined systems as a functional unit, the pipe line ranks first in the world as a natural gas carrier of such diameter, being roughly 1125 miles from point of origin to terminus. Adding the loops to this figure, the length be-

The last major operation prior to lowering into ditch is to join the sections. While couplings are tightened the pipe is on skids.



Welding of the line was by arc, with generating equipment truck-mounted. For cathodic protection, all joints were electrically bonded.

comes 1547 miles of main gas transmission artery.

The combined systems speak in staggering totals. In all, 283,000 tons of steel have gone into the main line, with many additional tons in gathering lines and distributing systems. Seventy-five thousand horsepower are needed to propel a maximum load through the line. Part of this energy is contained in the producing formations, but 12 compressor stations spaced along the right-of-way supply the bulk of needed energy.

Regardless of big figures which mean but little in their interpretation, there is no estimate possible of the value of service afforded the home-owners and domestic consumers providing the majority of outlet connections in the market area. Nor are there means of estimating the value of the line to industry which makes use of the gas in the manufacture of a multitude of items. And on the other hand, the transmission of the gas returns to the producing area the value of the gas volumes handled; in this manner economically linking the

At left above is a machine which cleans the pipe of mill scale in preparation for the hot coating being applied in the picture below.

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THE COMPOSITE CATALOG

Finnish ski garb served as triple protection; against fumes and vapor rising from the hot-coat, against cold and against mud, snow and slush.

source of supply with market demand.

This bringing together of supply and demand is the foundation of the American gas industry, and typical of it is Panhandle Eastern Pipe Line Company's system from Texas and Hugoton gas fields to Indiana for delivery through Michigan Gas Transmission Corporation's main line to Detroit. Typical of the industry, also, is the vision with which the huge gas reserves were associated with an equally huge market represented by eastern domestic and industrial consumers.

A handful of resourceful men sparked the effort to bring the two together; witnessed the final covering of mile after mile of completed line. Reverses were met, not the least of which was the paper panic of 1929. Politics, labor opposition and court decisions retarded ultimate completion, final power to serve. But the task was fundamentally sound. The transmission system became an accomplished fact just ten years ago. Successive expansion, increasing market demands and greater capacity for greater service is the story of the line.

With weights to counterbalance the weight of the pipe, tractors pick up single joints or sections, move them quickly into position for coupling. The sling beneath pipe prevents slipping; protects coating while being handled.

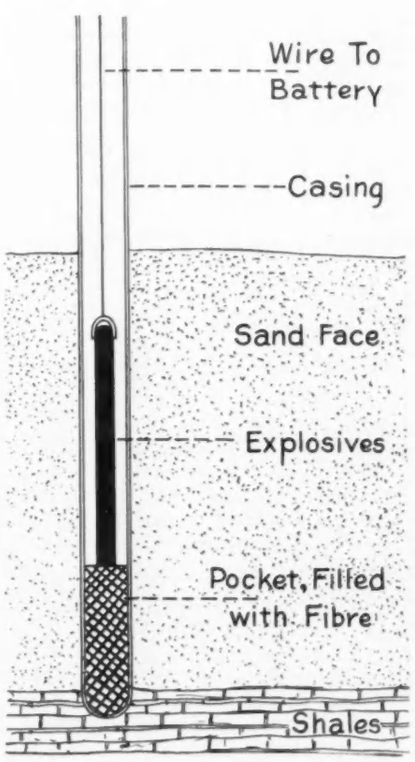
Shock-Absorbers For Oil Well Shooting

By J. R. COZZENS

In many areas new wells are brought into production by means of explosives, the strength of the shot being determined by the depth and texture of the sand-body, and the conditions under which the field is to be operated. In the majority of cases, production is increased many fold by effects of the blast; but in other cases, and the number is greater than many surmise, the well fails to respond. Flush production, after the first few days, begins to diminish, and on many occasions, disappears entirely. This failure in newly-shot wells is coming in for much study in the eastern stripper fields, especially in Southern Ohio, and repeated tests tend to prove that such failure is rarely due to a faulty sand as was generally believed, but is caused by sand-breakage at the bottom of the well, thus allowing fluid to escape through the shales underneath. The damage sometimes can be remedied by the use of concrete, but the most efficient course is to prevent its happening.

To accomplish this purpose, the operator accepts the fact that a charge of explosives placed in the earth exerts at the time of firing equal force in all directions unless otherwise controlled. Formations immediately below the charge are broken and crumbled as are the sides of the blast-hole, and it is this downward "kick" that often plays havoc with oil wells. The formation at the bottom which should normally become a leak-proof reservoir is broken into fissures which may extend downward and through it for several feet, thus forming avenues of constant drainage. To prevent this happening, the operator before placing an explosive first drills a pocket into the formation which is to constitute the reservoir. This pocket starts at the exact position in the sand-body where the lower tip of the explosive is to rest, and continues for a depth of three to six feet, depending upon the amount of sand-face to be blasted. The pocket is filled and tamped from bottom to top with short-fibre asbestos or rock-wool insulation materials. Tamping is done by means of a shield placed over the cutting edge of the drill-bit. The container of explosives is then lowered to rest upon the tightly tamped fibre, is anchored, and fired in the usual manner.

It would seem that 100 pounds of mineral fibre, the amount usually required per well, would have but little effect upon the force exerted by a healthy charge of nitro-glycerine or gelatin, but it is usually quite sufficient to break the rhythmical vibrations at firing time. The downward force of the blast is caught in this resilient buffer, and modified to an extent where under-breakage is a rarity. A special advantage of the fibre over other resilient materials is that it does not "burn-up" in the intense heat generated by the blast. Fibre which strays from the pocket is easily removed by suction bailer during the cleaning-out process, and does not interfere in pumping the well.



Cross section of well, showing fibre buffer in position.

Since there are no fast rules limiting the need of an explosives buffer to any particular territory, the fibre method may be utilized wherever under-breakage is feared. In the stripper fields, the method is proving effective in both hard and conglomerate sands especially when underlaid with mud and shales. The buffer is also used when reservoirs are to be blasted in different places in a sand-face. The procedure is to fill the bottom of the hole with rock or cement up to within three feet of the position desired for the shot. This three-foot vacancy is then tamped with fibre, and the explosives detonated upon it.

In localities where fibre-buffers are used at the time of shooting, the number of wells failing to "come back" after the blast has been reduced from a ratio of 3 out of 10, to less than 1 out of 10. Tests made on wells which were thus treated and pumped for a period of three years show the percentage of reservoir leakage to be remarkably low. Since waste by leakage has long been a troublesome factor in most oil fields, this method of blast-control which tends to curb the trouble at its source should prove a worthy contribution.

Organizing Safety Work

By TRACY N. SHAW, Safety Consultant

IT IS the purpose of this article to appeal to the executive who has not as yet satisfactorily solved his accident problem. Because he is a busy man and wants his information brief and to the point, only the more important phases of accident prevention methods have been taken up and those only in a somewhat superficial manner.

The author, Tracy N. Shaw, was formerly director of industrial relations for Midwest Refining Company, and the safety work of the firm was part of his duties. During the time of his service, the accident frequency was reduced from 87.9 to 2.1. Twice the concern received the Joseph A. Holmes award. The recommendations and suggestions set forth in the accompanying article are based on his experience. The various methods suggested have been tried and proven successful.

ACCIDENT prevention or safety work should be viewed from the humanitarian rather than the monetary side, but because most executives are more interested in reducing costs than in curtailing accidents the financial side is probably the best starting point when organizing for such work.

Monetary Phases

The industrial organization that has no safety department probably has a poor idea of what its accidents are costing, as there are very few accounting departments that keep these costs segregated in such a way that they reflect fully the true picture, nor are they brought to the management's attention. There are many construction jobs that have been figured with a very safe margin, but which have run high when completed because insufficient allowance was made for lost time accidents.

Many executives are satisfied in their belief that they have very few accidents and that the cost is small simply because they do not know. An executive facing the problem of investigating the lost time accident condition of his organization should first have a check made into past records and determine as nearly as possible how many cases there have been and approximate the cost. A very good estimate of the total loss can then be made by multiplying by five the direct costs chargeable to the accident. If no figures at all can be obtained, it is well to start a record of accidents and their cost before attempting to solve the problem. After a year's experience there should be available some figures which would enable a more intelligent approach to the problem. If figures of any accuracy at all can be obtained, the executive can then determine what organization is justified in an effort to reduce the expense of accidents.

A Specialized Activity

Safety work is just as much a specialized activity as production, advertising or sales and should be in charge of a man trained in safety, reporting to the head of the organization. Great care should be used in the selection of a safety director. To be successful he must be a diplomat; he must be sold on safety and he must know safety; he must practice it as well as preach it. It is not necessary that he know the business, but he should be mechanically inclined in order that he may apply himself quickly to the mechanics of the business. His work is with the superintendent and the foreman, and he should not be expected to know more about the work of a department than the foreman in charge. His job is to sell safety to the foreman and to assist him in educating his men in safety, but *responsibility for the safety of his men should never be taken from the foreman.* He should be made to understand that it *is his responsibility* and that he *cannot evade it.* The safety man is his counselor and advisor but must in no way assume his responsibility.

Once on the job, the safety director must have the absolute support of the management. Without it he can accomplish nothing. With it, if he is the right kind of a safety director, he can accomplish much. After he has been on the job a while and does not begin to get results, there is something wrong and an investigation is advisable.

The first duty of the foreman in the inauguration of a safety program is to put his house in order. Eliminate as far as possible physical hazards and if advisable make changes in methods of operation that will further reduce the danger of accidents. It also will help to convince him of the company's sincerity in its safety program.

After this has been accomplished the biggest phase of the problem is confronted; that of training the workman in safety. It is an established fact that men will try harder to prevent accidents from fear of losing their jobs than they will from the fear of getting injured.

It must be ruled, therefore, that a workman who persists in unsafe practice will be dismissed. He must be taught and made to believe that the "safe" way is the "efficient" way and that production without safety is too expensive. A workman may be given certain rules of safety on his job in a comparatively short time, but it takes a long time and much effort to develop the "safety mind" just as it takes a long time to develop the "legal mind," but when this has been accomplished results worth while will be obtained.

The education of the workman to develop the "safety mind" is a phase to which much time has been spent and is one that must vary according to the type of workmen employed, and the character of the work, surroundings, etc.

Competition is the life of trade and it can serve as the life of safety work. It is almost a universal custom for large organizations having many departments to create a spirit of competition for results in safety between departments. Competition between companies in the same line of industry is also an incentive to greater effort toward the elimination of lost time accidents. The National Safety Council, which is the father of the safety movement in this country and has accomplished such wonderful results, sponsors contests in many of the industries in its membership.

Recognition and reward also have played an important role in getting results. It has been said that "safety pays its own reward." We are each paid a daily wage, salary or commission for our services but who is there that does not appreciate some special recognition for services well done, especially if that service is in excess of some other accomplishment.

Unfavorable legislation often comes when industrial institutions fail to recognize their responsibility to society in properly handling the accident problem. Whereas the necessity of such legislation is obviated when reasonable measures are taken by the major institutions in accident prevention work.

An industrial institution, having in its operations extra hazardous occupations, will find that a safety department organized on a common sense basis, in charge of a competent head and backed by a management that is sincere in its desire to reduce accidents, will be a profitable investment. The cost of accidents will be reduced far in excess of the cost of operation of such a department.

It should be borne in mind at all times that safety is not welfare work, it is part of production.

Selecting Safety Director

After a survey of available data has been completed, assuming that it reveals too many accidents and too high costs, the executive is then confronted with, "What shall I do next?"

It is necessary to have someone in charge of safety work, to promote it and sell it to the other employees just as it is necessary to have someone in charge of sales or any other branch of an industry. It must be someone's "business" to put over safety. There are several possibilities. Select someone from the organization to put in charge of safety work or hire someone who has proved that he is a competent safety man and capable of solving your problems.

If the plan of taking a man from the organization is adopted, and there are many points in favor of that method, do not think that just anybody can fill the bill, pick someone who has a good position and good standing, who has prestige among other men, especially foremen. One of the advantages in selecting a man out of the organization is that he knows the plant, the men, the resources, etc., of the organization. He probably knows its weak points and where the accidents occur. However, he must be sold on safety, as he will be inclined to excuse accidents and try to figure out how they *could not* be helped instead of taking the stand that they *should not* have happened.

If this plan of making a safety director is adopted, it becomes necessary to train him along safety lines. As mentioned before, he must develop a safety mind. He may be sent to visit other industries, attend safety councils, etc., and by contact with other safety men learn safety and how to put it over.

Another plan is to employ the services of an expert, one who has had years of actual experience in safety work as a consultant to train the man selected from the organization to be the permanent safety director. The new man will be trained much quicker and will be able to profit by the experience of the other. In due course of time the experienced man may be sent on his way and operations left in charge of the local appointee.

If an experienced man is hired to take on all the safety activity of your business, care of course should be used in his selection and the type of man selected should be one that will fit into your organization. For example, if the organization is large and there will be several safety inspectors operating under a safety director, it will require a different type of man than the small organization having only one man who must function for each and every phase of the work. In fact, much the same type of man should be selected for safety work as would be selected as sales or advertising manager or for any other branch of an organization.

Whatever method is used or what type of safety organization is formed, its line of authority must go back directly to the top man in the organization or even to the board of directors. In a manufacturing institution it would not be logical to have "parts inspection" directed by the manufacturing department. It is always directed by the engineering department or the top of the firm. In safety work it is the same; the safety department must trace back directly to the top and not through manufacturing and production channels. In fact, if safety is known as "the boss' pet hobby" it will get away to a wonderful start and prove to be a hobby well worth while. After having selected the man for the job and placing him on it, the executive must then support him to the limit.

Single operating companies too small to afford a full time safety director may group themselves with others interested in solving their accident problems and together employ a safety director. Some very good results have been attained in this manner.

Competition can be developed between companies the same as between the departments of a larger company. By an exchange of information each profits by the experience of others.

Contests for achievement can be conducted on a larger basis than possible in each unit by itself.

Developing a "safety mind" or "safety consciousness" is a very important factor in accomplishing good results and the larger the group of workmen interested, the

more talk and the more interest can be developed.

Having appointed the safety director and placed him on the job does not relieve the management from further responsibility as regards to safety work. The same follow up council and contact is required as would be accorded an advertising or sales manager.

If a new man, trained in safety is hired, it becomes the duty of the management to start him off right and make him acquainted in the organization in such a way that he will have the respect and receive the consideration that is due the job. Superintendents and foremen must be made to understand that he represents the management and that his recommendations must be put into effect.

His first duty is to become acquainted with the personnel and property of the organization, observing as he does so, as much as possible unnecessary hazards in machinery and methods. After he has established himself and not being too hasty, make his recommendations for such corrections as seem advisable.

His next step should be to promote safety meetings among the employees by departments, conducted by the foreman of the department. Once a month is not too often to start with. Safety should dominate the program, but a little variation introducing other subjects of interest is not objectionable, in fact, should be encouraged.

The foreman of the department should be held responsible for the meetings, but receive every possible assistance from the safety man. Much could be written on the subject of safety meetings alone. To be successful, naturally they must be made interesting and attendance, although compulsory, if willing and cheerful, will produce much better results than if conditions are otherwise.

The main object of the meeting and its most essential phase is to get the men to talk and bring to light hazardous conditions. It has been found that conditions can be revealed in this way that do not seem to be reported by other means. There seems to be an association of suggestions and thoughts that makes men either think of things not previously recognized as a hazard or simply loosens their tongues.

At the safety meetings, various accidents that have occurred may be discussed and means by which a recurrence can be prevented.

Discussions, oftentimes arise concerning the accident that did not happen when conditions that are more or less common to all were recognized as hazardous and the necessary steps to prevent an accident were taken.

Numerous are the forms of competitive activity and awards that may be promoted by the safety director, individual, departmental, inter-branch and inter-company. Most men enjoy a contest of any kind, marbles, golf, baseball, football or any type of sport. The same spirit of the contest will claim their interest in the realm of safety as in the realm of sport.

As the school child works for a gold star for some simple achievement in school, the average workman will work for a recognition in safety accomplishments and also take pride in its display whether it is a badge for personal achievement or a flag as a departmental goal. If the emblem is attained by making a better record than some other workman or department, it is valued more than if it signifies merely a certain degree of perfection.

Certainly there is ample proof that competition has accomplished great results in safety work throughout industry.

Inspections

Responsibility for safety inspections should rest with the safety director. However, it is not to be expected that he is an expert in all lines. It is his duty to see that regular and special inspections are made, preferably by those most competent.

In speaking of regular inspection it might be daily, weekly or yearly according to subject and conditions. High pressure containers and lines require a certain frequency of inspection while a construction job would be something entirely different.

Much has been written on inspection and it is too big a subject to cover in this article and we are merely listing it as a duty of the safety director to see that proper inspection is provided for all phases.

Investigating and Reporting Accidents

Any industry having extra hazardous employment and maintaining a safety director or inspector should be so organized that when an accident occurs, the safety inspector should be notified at once. It then becomes the duty of the safety inspector to see that the injured workman is given proper care and then investigate all circumstances pertaining to the accident, its causes, direct and contributing. If possible, determine responsibility; make a careful record of everything pertaining to the case. Of course, the more severe the injury, the more important the report.

The first duty of any employee is to his company. Therefore, the most important thing for the safety inspector is to get the true facts in any case as it is the true facts that the company needs in protecting itself against false prosecution.

Present economic conditions are such that industry is being persecuted on every hand by ficticious cases of disability. I have been interested in and connected with safety work and workers in industry for quite a number of years and it is my experience that straight legitimate cases are seldom if ever contested. They are always cases known as "borderline." Naturally it is a difference of opinions and each side is prejudiced — therefore lawyers and judges. If there was never a difference of opinion there would be little use for the legal profession. Hence, it is very desirable to have a complete record on each and every case as we never know when a minor accident will develop into a major law suit.

Now the line must be drawn somewhere and some years ago we drew the line between lost time and no lost time. So many "no lost time" injuries become hospital cases that a simple form for reporting is advisable. They will prove very valuable in a short time. One case can more than pay for the trouble for a whole year. Experience, of course is a wonderful teacher in seeing and knowing what to report. Sometimes a very little discovery changes the entire situation. Suffice it is to say that nothing is too unimportant to report.

Safety Propaganda

Human nature may vary little, but human activities and types vary considerably in different kinds of industry. Therefore, safety propaganda must vary in accordance with the type of industry and workmen employed.

Bulletin boards are a favorite

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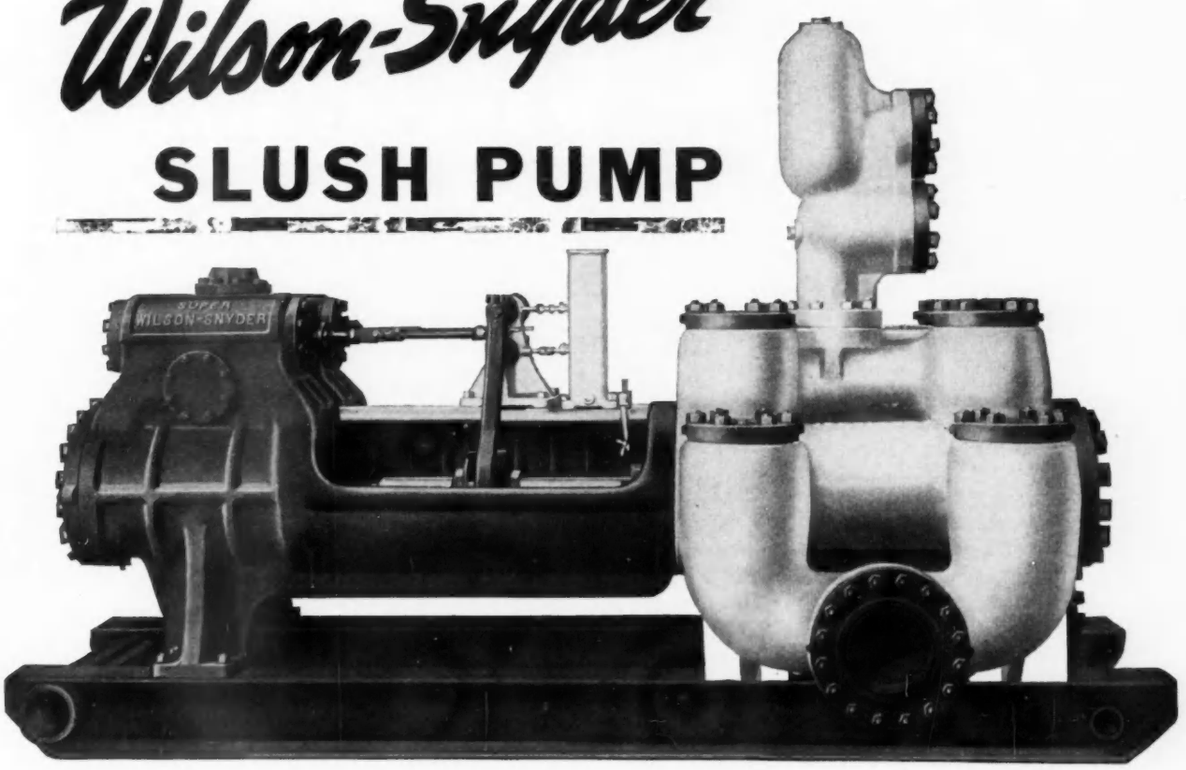

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form of display for propaganda and thousands of bulletins and posters have been printed, good, bad and indifferent. Undoubtedly posters are effective and get results but I believe a large majority are wasted effort. To be most effective, bulletin boards must be placed where the largest number of employees possible will see them. The bulletins or posters used must be so designed as to attract attention. Only one poster should be placed at a time and it should be changed frequently. Many forms of auxiliary attractions, such as news photographs, baseball scores etc. have been used to call the worker's attention to the safety bulletins. The value of these counter attractions is somewhat questionable but again depends a great deal on location etc.

Some bulletin boards display safety records of a department or a group of departments and when the worker reads of the accomplishments of his department it is calculated to spur him on to greater efforts especially if some other department where his best friend works has a record close to his.

Another form of "telling the world" about your safety record is the safety flag which may fly over the headquarters of a department as long as there have been no accidents for the month, or in some cases, when all men are on the job and no one off because of accident.

All such forms of propaganda should be kept up to date and as the accident condition changes in an organization the various forms of safety work must be constantly changed to fit the problem at hand. Imagine the erection of a large plant where the problem of safety is largely one of construction work and many of the same employees are kept on as workers in the finished plant. The problems of construction no longer exist but have changed to one of production and maintenance. The type of work has changed entirely and the accident hazards are entirely different, yet the human equation is much the same. The safety inspector must adapt himself to new problems.

The erection of a refinery or the drilling of an oil field will have just such changes taking place.

Pay roll inserts or small pamphlets, cards, etc., are a common form of putting over individual and personal hints on safety and perhaps have had a constructive part in safety throughout the industry. My personal observation of this form of advertising, however, has been that the men who paid the most attention to this sort of thing were the ones who needed it the least and the type of workman to whom the appeal is made would drop them on the floor or into the nearest waste basket. The safety calendar has been worked hard by the National Safety Council and apparently has been effective, judging from the number sold.

Monthly periodicals of various kinds of safety booklets have been tried with varying success. There is no rule that I know of for judging this or that in a matter of safety propaganda. What apparently goes over big in one case is a flop in the next one.

All I can say is that if you have an idea that seems good and does not cost more than you can possibly get out of it, try it out. If it works, push it along as long as you get results with it. When it begins to slip, drop it and hit them from a new angle. If it flops in the first place, drop it at once. It will not take long to sense from your workman whether or not your material is going over. Keep in touch with a few key men throughout the works and they will keep you informed on how the others take it.

Monthly and Annual Reports

Like any other branch of an industry, sales, production, etc., there should be monthly and yearly reports which will show the progress of the department and comparison with results attained in previous months and years, also comparison with other members of the industry.

Through the periodical reports, the safety director has the opportunity of calling the management's attention to the achievements of the department. It is also in these reports that the savings in operating costs brought about by safety may be shown. Many other items may be best shown in these reports. A letter of explanation may well accompany a report wherein there are no limits to what may be properly mentioned concerning safety. A safety director should give his report careful study and develop them from time to time to give the truest, most complete and comprehensive picture possible.

In the annual report, in addition to number of accidents, frequency rate, severity rate, etc., costs of accidents, should be shown, medical costs, compensation costs, etc. Comparison should be made with previous years. Costs proportionate to pay rolls, number of men and average cost per accident and as many points of interest as possible shown.

First Aid

First aid plays an important part in safety work, not only in the prevention of infection and the proper care of serious injuries but also in accident prevention. The Bureau of Mines has kept records in the mining industry over a period of years and has found that men trained in first aid are much less apt to get hurt.

Compulsory 100 percent training in first aid is highly advisable and if put up to employees in the proper way will meet with hearty response. The forming of first aid teams and holding contests for them annually will help materially to maintain interest and increase the efficiency of the training.

A good plan after 100 percent training has been established is to require each new employee to take the training within a certain length of time from the date of his employment. To do this, monthly classes will probably be required.

First aid training has practically eliminated trouble from infection of minor injuries in many organizations.

Taking Safety Into the Home

Industrial institutions having their own camps or communities will find that it is well worth while to carry their safety work into the homes of their employees. Invite their wives to safety meetings occasionally and send to the home printed matter. A last caution to "John" as he leaves home for work may help a great deal.

Records now show in many cases that men are safer at their work than in their "off hours." An accident and injury to an employee on the highway may not cost the employer a hospital bill, a doctor bill or compensation; but he is deprived of the employee's service while laid up just as much as though he were injured "on the job." Therefore a complete safety department should cover education and propaganda in all the activities of an employee.

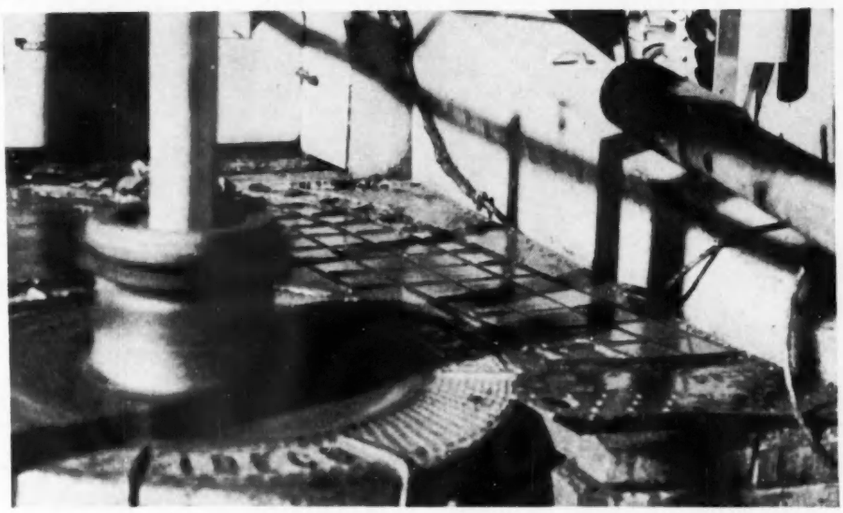
A well balanced broad safety program contributes not only to the advantage of the employer but is a distinct contribution to the welfare of the public at large.

DRILLING CONTRACTORS' NOTEBOOK

Helpful Suggestions For Those Interested In Drilling Methods

Operating Ideas Maintenance Hints New Rig Hook-ups

Published as a regular feature of THE OIL WEEKLY



One half- or ¾-inch rods welded to sheet steel form a lasting derrick platform covering that prevents skidding of stacked drill pipe and withstands punishment.

1. PIPE HANDLING

Patterned Sheet Steel Provides Durable Non-Skid Derrick Platform

ALMOST from the time rotaries have been used, drill pipe has been stacked in singles, doubles, triples and fourbles in the derrick with the male end of each stand resting on some sort of planking placed between the rotary chain and the table. Lagging, made of soft rope nailed to the planking, is commonly used to prevent skidding; but after a short time wear has scuffed away most of the retaining rope and has torn up the surface of the planking.

Louis Sikes, drilling contractor and producer in Southern Oklahoma and North Texas, has designed a platform of heavy sheet steel in place of the usual wood platform for stacking drill pipe. A checker-board pattern is laid on this platform by welding ½- or ¾-inch rods in squares, each square large enough to retain a single stand of pipe.

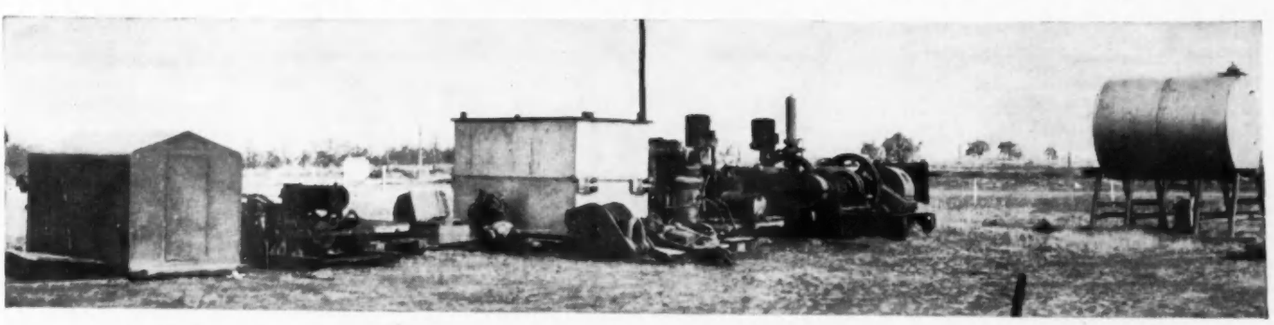
The steel plate is cut to conform to the outlines of the space around the table and rotary chain housing. It butts up to the apron of the draw works and forms a seamless cover for the derrick floor at this point. The roughened surface forms a skid-proof floor to walk upon, and even with the floor covered with mud, accidents are prevented when using tongs or snubbing lines for spinning the pipe.

2. RIG CARE

Proper Stacking Saves Later Trouble

WHEN not in drilling service, idle rigs should be stacked in a manner faciliating anticipated transportation from the yard to well location.

The accompanying photograph shows a stacked rig, with attention given future transfer as well as to present placement on proper foundations. From left to right are shown the generator unit, rotary table, traveling block, crown block, rotary swivel and rubber hose, doghouse, unitized draw works, two power units and the slush pump. A diesel fuel tank is stacked



Sturdy foundations are necessary when stacking an idle rig. Attention should also be given to arrangement for convenient transportation from the yard when the rig is returned to service.

on a pipe rack in the right foreground. Wood foundations help prevent deterioration to many mechanical parts of the rig.

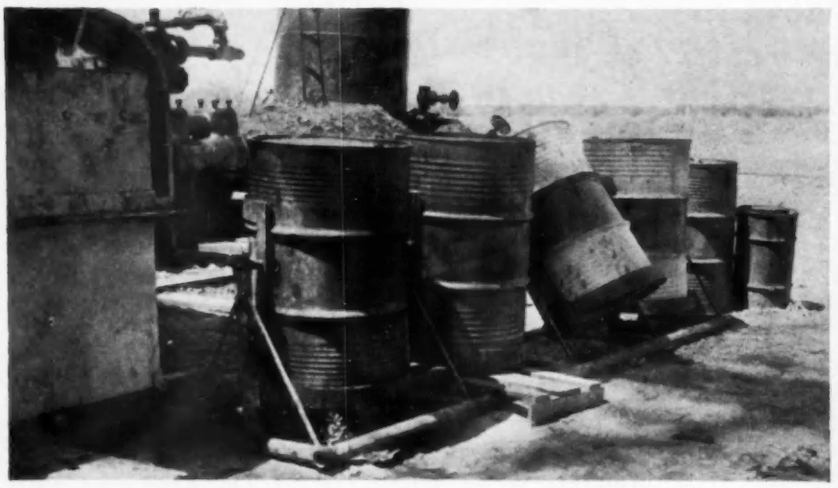
3. LUBRICATION

Rack Halts Waste; Aids Handling

A DRILLING contractor with several strings of tools in Archer County, Texas, uses a large quantity of lubricating oil in multi-cylinder internal combustion engines operated on natural gas and butane-propane mixtures. As the oil is obtained in bulk, delivered at the rig in standard drums, provisions are made to prevent waste and at the same time make it convenient for employes to draw out the required amount when refilling crankcases and lubricators.

A rack, designed to accommodate four drums, is made of 2-inch pipe and sucker rods, with flat iron for drum baskets. The base, of sufficient length for four drums, has 2-inch sides and end pieces with 3 intermediate cross members, all welded. Two-inch risers, welded to each end piece and cross member, are vertical and about 6 inches longer than half the length of the standard oil drum. Each riser is braced with 2 pieces of sucker rod, welded to the riser near the top and to the cross members where they join the long side pieces. The top of each riser is slotted by cutting a V-shaped notch across the upper end.

The baskets or carriers for the drums are made of flat iron. The lower part is a complete circle with crossing braces to support the drum. Side members of heavier iron are welded to the circular base, 180 degrees from each other. They are sufficiently long to extend above the top rolling band when the drum is standing upright. A semi-circular piece of flat iron is welded to the top of each side member so that the rolling band will slip beneath the lower ends to prevent the drum from slipping. Trunnion pins are welded to each vertical side member, in position at about the center of the drum.



This rack accommodates four drums of lubricating oil. It provides convenient handling of bulk oil with a minimum of waste.

Each of the four drum carriers are identical and will fit into any section between the vertical posts that are welded to the base. A full drum of oil, slipped in place with the lower end placed in the circular bottom of the rack, can easily be tilted to withdraw the desired amount of oil. Appropriate nipples and gates are screwed into the bung hole for controlling the flow of oil. Vent pipes may be placed in the smaller bung hole, or the plug may be used as required.

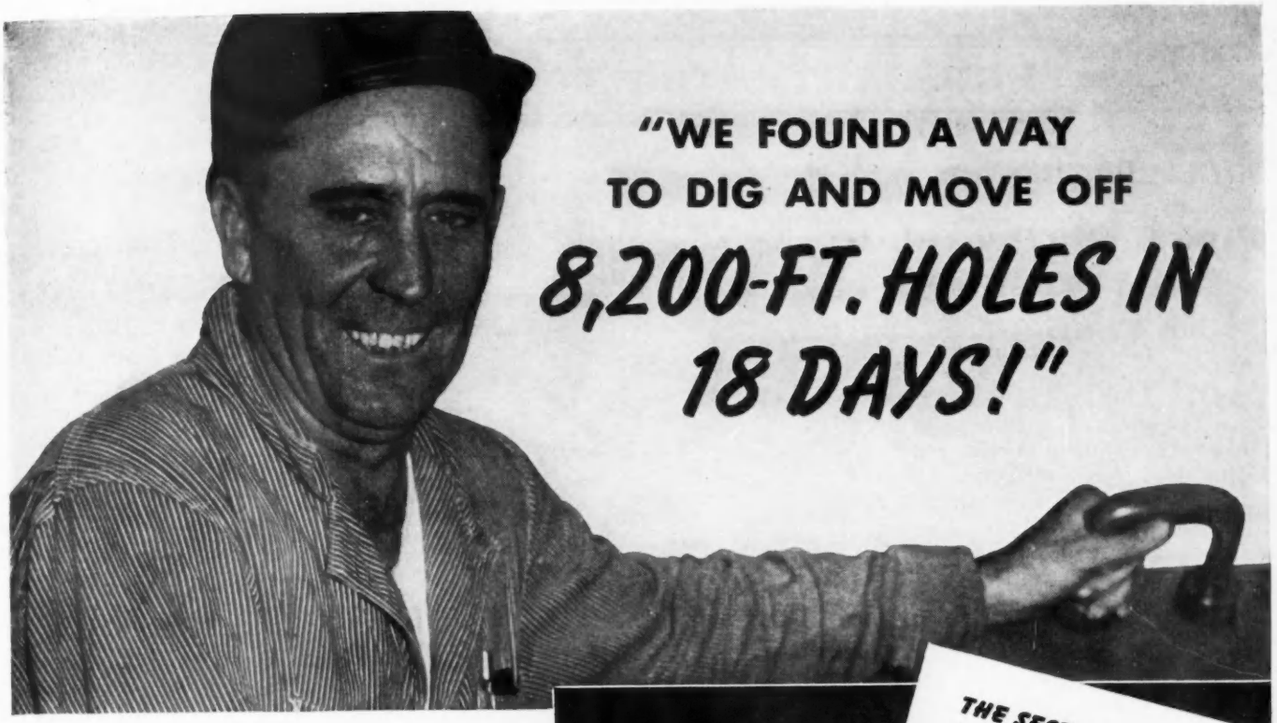
As many different grades and weights of oil as may be required at a drilling rig can be placed in the drum rack without risking loss by spilling. The rack is relatively inexpensive and can be placed at the most convenient point near the engines or beside the tool house. It may conveniently be moved from one location to another without damage.

This post, which may be conveniently fastened to the derrick floor, holds the tong well out of the way when not in use.

4. TONG USE

Hitching Post Is Safety Device

A TRIANGULAR welded back-up post combined with a tong support are safety devices well worth adding to the rig. The post is made of 6-inch pipe while the support is constructed of 2-inch and ½-inch pipe. When not in service the tong is held securely. The metal base is fastened to the derrick floor with screws.



"WE FOUND A WAY TO DIG AND MOVE OFF 8,200-FT. HOLES IN 18 DAYS!"

"Finished in 18 days is a pretty good record even on a 4000-5000-ft. hole. But when you move on, rig up, hurry down to pay, and move off 8,200-ft. holes in that time—*you're movin'*. And that's just what we've been doin' down in the Gulf Coast area.

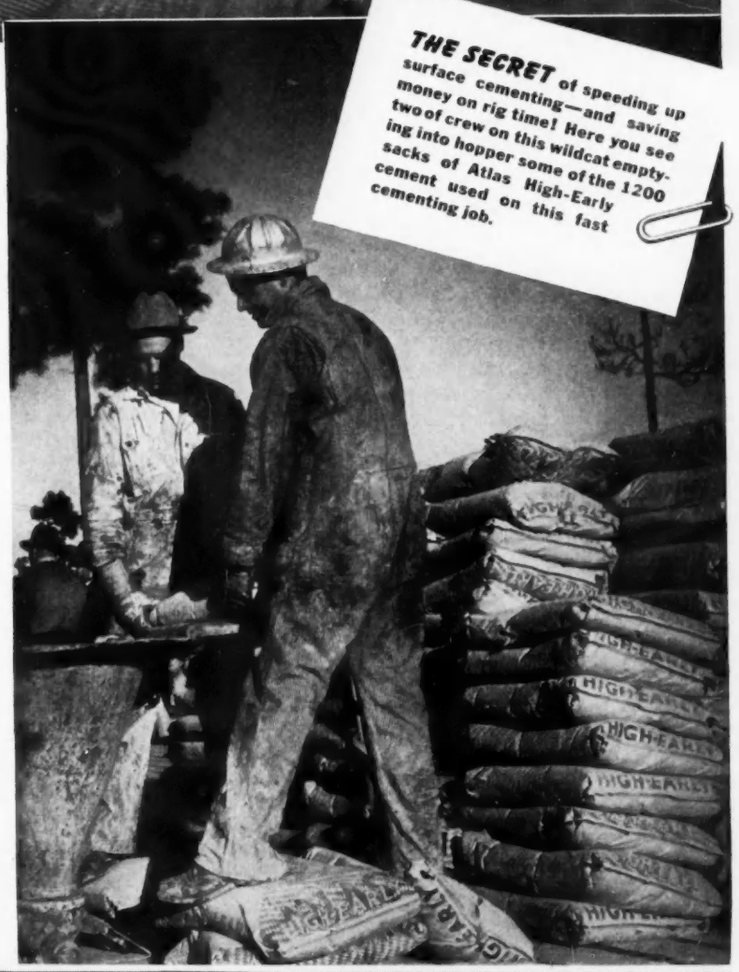
"How do we work so fast? Easy! Take this 8,200-ft. wildcat, for instance. Couple of days ago we set and cemented 2004 ft. of $13\frac{3}{8}$" surface pipe. We used Atlas High-Early—the cement which gains strength much faster than normal portland cement. In this way we 'picked up' considerable time.

"We've cut corners on working time in other ways, too. But using Atlas High-Early cement sure has cut a *big* chunk off our rig time...and has saved us plenty of money!"

You, too, can save time *and money* by using Atlas High-Early cement not only for surface and conductor pipe, but also for rig foundations and cellars. Try it and see! Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), Amicable Building, Waco; Tulsa; Oklahoma City; Kansas City.

• • •

AND FOR DEEP, HIGH-TEMPERATURE CEMENTING, guard your well investment with UNAFLO, the easy-flowing, hard-setting cement with the retarded set.


THE SECRET of speeding up surface cementing—and saving money on rig time! Here you see two of crew on this wildcat emptying into hopper some of the 1200 sacks of Atlas High-Early cement used on this fast cementing job.

OW-H-7

Atlas High-Early Cement

A UNIVERSAL ATLAS PRODUCT

5. DERRICK HEATER

Pipe Grille Provides Cold-Weather Comfort

A WELDED grille of 2-inch pipe, mounted on a 3-inch header and with trapped drain, serves Delta Drilling Company as derrick floor heater on its deep test in Smith County, Texas.

The heater, 7 feet high, is set up on the operating side of the rig, far enough out of the way to avoid possible accidental contact and burns. When backed by canvas, makes a most effective means of providing warmth not only to the driller and floor men while at work, but also for accurate functioning and recording of the various instruments and gauges used in deep drilling.

Fabricated from old pipe, the grille can be cut into two sections for transporting to a new location, or can be altered to fit by ordinary field welding. Angle iron brackets welded to the ends of the 3-inch header provide support for the heater, while the upper portion may be steadied by wiring to the derrick shelter or slung from the derrick structure itself.

Oil pipe is used for this welded grille. It provides a derrick floor heater that may be easily transported to a new location.

A cathead attached to an automobile drive shaft provides power through two pulleys on the derrick floor up to the derrick man.

6. DERRICK BUILDING

Automobile Drive Supplies Power

A SPECIALLY constructed cathead attached to the drive shaft of an ordinary automobile may be used to advantage in shortening the time required for erecting steel derricks.

Stresses and strains exerted upon the derrick parts during drilling operations distorts girts, braces and sway bracing sufficiently so that misfits result by the time the derrick has been reconstructed three or four times. Changing weather conditions, too, affect length of the derrick braces. One man cannot exert enough pressure to force the parts together without mechanical assistance.

7. RIGGING UP

Flexible Mounting For Drilling Units

PROVIDING a fastening with a wide bearing surface and yet not too rigid to prevent stress-relieving flexing under derrick vibration, one drilling contractor has improved on the usual method of tying drawworks and drilling engine to the derrick with hookbolts.

Straight bolts are used, the lower or sub-structure ends passing through holes cut in sections of 4- or 6-inch pipe held up against the floor braces of the substructure. Short pipe spacers and washers over the ends of these bolts bring the nuts down to a point where they are easy of access, and can be inspected and tightened easily.

This pipe-mounting transmits the load across all the braces contacted by the pipe, and provides a curved and straight line contact that allows a slight amount of motion or adjustment to strain under vibration of derrick or equipment. The slight amount of spring provided by the cylindrical pipe section also acts to absorb vibration, and thus to prolong the life of the tie-down bolts.

Bolts used to fasten drawworks and drilling engine to derrick floor are passed through 4- or 6-inch pipe to provide a fastening with wide bearing surface and adequate flexibility.

Four A.P.I. Production Meetings During Coming Month

THE American Petroleum Institute's Division of Production will be exceptionally busy during the coming month. Four district meetings will be held between March 12 and April 12.

First of the district meetings will be that of the Mid-Continent section, to be held at Wichita, Kansas, on March 14-15. This will be followed by the Pacific Coast meeting at Los Angeles on March 19. Then comes the Southwestern district meeting at Houston on March 28-29. The Eastern District of the A. P. I. Division of Production will meet at Columbus, Ohio, on April 11-12.

Programs for the first two of these meetings have been announced. A study shows that economic and political topics have been included along with the unusual technical and operating papers, and that some outstanding speakers have been obtained. The Eastern and Southwestern districts have not yet completed their programs, but plans are well under way and an announcement of their speakers and papers will be made soon.

The Mid-Continent section is to hear Governor Payne Ratner of Kansas, who recently took a leading part in the Cole oil control hearings at Washington. He will discuss "Kansas Oil Problems."

Governor Leon C. Phillips of Oklahoma will address the Pacific Coast district meeting. Phillips is well known to the oil industry for his bitter attacks on the Cole oil control bill, having spoken at the annual meetings of the Independent Petroleum Association of America, and the American Petroleum Institute last fall. He also was a witness and leader at the recent Cole oil control hearing in Washington. Governor Phillips' address will be broadcast from 9:15 to 9:45 p. m. over the N. B. C. blue network, which will include 26 stations west of Albuquerque. Governor Phillips has chosen as his subject "The Trend of Public Interest in the Petroleum Industry."

The tentative program for the Southwestern District meeting also calls for guest speakers who will discuss economic or legislative topics.

However, the technical programs have not been slighted, and will include

Program For Pacific Coast A.P.I. Meeting
Los Angeles—March 19

TUESDAY MORNING, MARCH 19

Practical Utilization of Rate-of-Penetration Drilling Data.
By C. A. Yeatman, Shell Oil Company, Inc., Los Angeles, California.

Oil and Cementing Factors Influencing Bond Between Cement and Formation.
By P. H. Jones and Denis Berdine, Union Oil Company of California, Wilmington, California.

Applications of Chemicals in the Petroleum Industry.
By W. W. Robinson, Jr., The Texas Company, Long Beach, California.

TUESDAY AFTERNOON, MARCH 19

Pioneering in Rotary Methods of Drilling in California.
By L. B. Little, Standard Oil Company of California, Los Angeles, California.

Trends in Allowables in California.
By L. L. Aubert, Bankline Oil Company, Los Angeles, California.

Bottom-Hole Control of Gas Production.
By E. W. McAllister, Kettleman North Dome Association, Avenal, California.

TUESDAY EVENING, MARCH 19

The Trend of Public Interest in the Petroleum Industry.
By Governor Leon C. Phillips of Oklahoma.

HOWARD C. PYLE
Chairman,
Pacific Coast District,
American Petroleum Institute.

ROBERT E. ALLEN
Arrangements Committee Chairman,
Pacific Coast District, American Petroleum Institute.

PAUL E. LEHR
Program Committee Chairman,
Pacific Coast District,
American Petroleum Institute.

such discussions as drilling penetration rates, salt water disposal, pressure maintenance, pumping problems, water flooding, cementing, plugging-back work, application of chemistry, bottom-hole control, etc.

Officers of the Mid-Continent District are C. H. Keplinger, chairman, Shell Petroleum Company, Wichita; T. J. Hamilton, vice chairman; H. V. Mathews, vice chairman, Stanolind Oil & Gas Company, Pampa, Texas; Henry E. Miller, vice chairman, Lario Oil & Gas Company, Wichita, and Herb Goodpaster, Kerlyn Oil Company, Oklahoma City, secretary-treasurer.

Officers of the Pacific Coast District are Howard C. Pyle, chairman, Union Oil Company, Los Angeles; R. N. McMaster, vice chairman for the Los Angeles Basin, Chanslor-Canfield Midway Oil Company, Los Angeles; H. C. Stone, vice chairman for the Coastal Area, The Texas Company, Santa Paula, California; A. C. Terman, vice chairman for the San Joaquin Valley, Standard Oil Company of California, Taft, California; W. G. Corey, treasurer, Pacific Gear & Tool Company, Los Angeles, and D. S. Kilgour, secretary, California Oil & Gas Association, Los Angeles.

Members of the program committee for the Mid-Continent District are Henry E. Miller, chairman, W. B. Berwald, W. H. Carson, J. S. Freeman, T. J. Hamilton, H. O. Harder, N. M. Hutchinson, A. J. Kerr, H. V. Mathews, C. D. Millers, Charles Rodd, Dr. E. A. Stephenson and L. R. Thawley.

Program committee members for the Pacific Coast District are Paul E. Lehr, chairman, T. A. Atkinson, E. J. Bartosh, V. J. Beissinger, D. L. Caldwell, W. H. Ferrand, R. W. French, Norris Johnston, C. B. Kimberlin, R. N. McMaster, F. A. Morgan and J. D. Robinson.

Program For Mid-Continent A.P.I. Meeting
Wichita, Kansas—March 14-15

THURSDAY MORNING, MARCH 14

Presiding Chairman:
H. E. Miller, Lario Oil & Gas Company, Wichita.

Co-Chairman:
A. S. Ritchie, McPherson Drilling Company, Wichita.

Welcoming Address:
Ralph Pryor, director, American Petroleum Institute, Wichita.

Response:
Henry Keplinger, Shell Petroleum Company, chairman, Mid-Continent Section, Wichita.

Oil Meters of the Positive Displacement Type.
By L. R. Van Arsdale, Pittsburgh, Equitable Meter Company, Tulsa.

Discussion by E. O. Bennett, Continental Oil Company, Ponca City, and H. E. Heithecker, United States Bureau of Mines, Bartlesville.

Pressure Maintenance at Cunningham.
By Colin Rae, Skelly Oil Company, Tulsa.

Discussion by Don Knowlton, Phillips Petroleum Company, Bartlesville, and Charles Rodd, Gulf Oil Corporation, Chase, Kansas.

Introduction of Chapter Officers.

C. H. KEPLINGER
Chairman,
Mid-Continent District,
American Petroleum Institute.

THURSDAY AFTERNOON, MARCH 14

Presiding Chairman:
T. C. Johnson, Wichita.

Co-Chairman:
R. Kay, Amarillo, Texas.

Kansas Oil Problems:
By Governor Payne Ratner of Kansas.

Foremanship:
By H. E. Zoller, Derby Oil Company, Wichita.

Discussion by J. Forrest Ihinger, Kansas State Board of Vocational Education, Pittsburg, and George Berlin, Skelly Oil Company, Pampa, Texas.

Larger Gas Fields in Kansas:
By J. H. Page, Kansas State Corporation Commission, Wichita.

Discussion by C. E. Brock, Kansas Power & Light Company, Salina, and Jim Fields, Morgan, Cobb & Flynn, Hutchinson, Kansas.

Submergible Electrical Centrifugal Pumping Units and Their Application:
By P. E. Loye, Reda Pump Company, Bartlesville.

Discussion by L. H. Thawley, Phillips Petroleum Company, Great Bend, Kansas, and Pat McDonald, Indian Territory Illuminating Oil Company, Oklahoma City.

THURSDAY EVENING, MARCH 14

Stag Dinner and Entertainment:
At Cardwell Manufacturing Company plant, Wichita.

FRIDAY MORNING, MARCH 15

Presiding Chairman:
T. J. Hamilton, Mid-Continent Pump Company, Oklahoma City.

Co-Chairman:
H. R. Goodpaster, Kerlyn Oil Company, Oklahoma City.

Taking the Pulse of a Pumping Well:
By. D. O. Johnson, The S. M. Jones Company, Tulsa.

Discussion by E. Kemler, Gulf Oil Corporation, Tulsa, and Lester Wilkinson, Stanolind Oil & Gas Company, Ellinwood, Kansas.

Some Practical Aspects of Water Flooding in Eastern Oklahoma and Kansas:
By Lynn C. Converse, Max B. Miller & Company, Inc., Tulsa, and R. R. Hawkins, consulting engineer, Parsons, Kansas.

Discussion by Jack Powell, Brundred Oil Company, Garnett, Kansas, and W. S. Walls, Phillips Petroleum Company, Bartlesville.

Rotary Completions:
By J. M. Gardner, Phillips Petroleum Company, Oklahoma City.

Discussion by Max Mahaffey, Cities Service Oil Company, El Dorado, Kansas, and C. D. Miller, Barnsdall Oil Company, Tulsa.

Search for Oil:
By Dr. Daniel Silverman, Stanolind Oil & Gas Company, Tulsa.

Election of Officers.

Ladies' Luncheon and Bridge:
At Innes Tea Room, after which there will be an airplane trip over Wichita for ladies wishing to go.

FRIDAY AFTERNOON, MARCH 15

Presiding Chairman:
C. A. Daniels, Phillips Petroleum Company, Amarillo, Texas.

Co-Chairman:
Herb Ladd, Stanolind Oil & Gas Company, Tulsa.

Oil Financing:
By A. W. Kincaid, president, Fourth National Bank, Wichita.

Cable Tool Drilling Problems:
By Eugene A. Stephenson, Department of Petroleum Engineering, University of Kansas, Lawrence, Kansas, and Kurt Sprengling, DeGolyer & MacNaughton, Dallas.

Discussion by J. S. Freeman, Skelly Oil Company, Tulsa; J. A. Aylward, Aylward Production Company, Wichita, and George Hinkle, Wichita.

Recent Developments and Methods of Plugging Off Bottom-Hole Water in the Arbuckle Lime Horizon.
By J. N. Miles, Cities Service Oil Company, Great Bend, Kansas.

Discussion by Fred Shelton, Phillips Petroleum Company, Great Bend, Kansas; Fred Malonee, Magnolia Petroleum Corporation, Wichita, and C. F. Seeber, Halliburton Oil Well Cementing Company, Great Bend Kansas.

Keeping Pace With Progress:
Film by S. F. Greeley, Lone Star Cement Company, Wichita.

FRIDAY EVENING, MARCH 15

Annual Dinner:
Allis Hotel, Vaudeville entertainment.

HENRY E. MILLER
Program Committee Chairman, Mid-Continent District, American Petroleum Institute.

HIGHLIGHTS IN THE WEEK'S NEWS

Allowables

House committee approves bureau's demand forecasts

Continued issuance of monthly forecasts of oil demand by the United States Bureau of Mines was given approval of the House Appropriations Committee last week in reporting out the Interior Department supply bill for the fiscal year beginning July 1, next.

Commenting on opposition offered the forecasts, issuance of which never has been specifically authorized by law, the committee pointed out in its report that members have received numerous letters of protest that the reports penalize many thousands of independent oil marketers.

"The committee has taken occasion to inquire into the question and several statements have been made," it was observed. "The committee was advised by these persons that continuation of the issuance of demand forecasts is highly desirable, that it acts as a stabilizer for the oil market, and that those persons objecting to the forecasts were in favor of a demoralized market which would enable them to purchase oil from small refineries at a low price and store it for sale when prices have advanced. The committee recommends continuation of funds for the issuance of the monthly forecasts."

In reporting the bill, the committee cut $5000 from the $260,000 recommended in the budget for the Petroleum Conservation Division, but made it clear during hearings on the measure that it had no criticism of the manner in which the division was being administered.

At the hearings, the sub-committee in charge of the measure commended George W. Holland, director, for the economies he has practiced in the administration of the Connally Law, and it was indicated that the slight cut in the appropriation would not interfere with the work in any way.

The hearings developed that Pennsylvania producers are opposed to extension of the Connally Act, but it was explained by Holland that they are suffering from low prices as a result of competition from Illinois oils. Pennsylvania, he said, is under no restrictions whatever, and the Connally Act does not apply there.

Sadler alarmed over increases Texas allowable; says politics

Alarm at an increasing Texas allowable was expressed by Railroad Commissioner Jerry Sadler last week in protesting increases granted Texas fields since the March state-wide order was issued.

He declared that it all began with increases granted to Gulf Oil Corporation for 10 fields in West Texas, and allowables raised at Plymouth and East White Point. He indicated these were "political" raises, to his mind, and that there was no real support for them.

"There is a firm demand for 1,408,000 barrels daily from Texas," Sadler said. The allowable for the week ending March 2, according to Texas Railroad Commission figures, totaled 1,495,935 barrels. The total state allowable is now probably 5000 to 10,000 barrels higher, as that week included several days in February.

"Before we made these changes, we had the state in balance with the exception of one or two fields," Sadler said. "When these twelve fields were raised, then other operators began to complain that comparable fields were obtaining higher allowables. I am against these political increases."

To consider revision of Michigan allowables March 15

P. J. Hoffmaster, supervisor of wells, called a general hearing for March 15 in Lansing to take testimony on the "desirability or necessity" of revising present proration allowables in all fields under state proration. The hearing was called after the State Advisory Board made general recommendations for lowering allowables in some fields and lifting allowables in others.

Hoffmaster also said testimony would be taken on Wise field, Isabella County, for proration consideration. The field is exempt at present.

Present state allowables are 100 barrels per day per well on 10-acre units. In Redding field, Clare County, a 20-acre unit field, the state allowable is 200 barrels a well, but since January 10, under a voluntary program of operators, runs have been cut back to 160 barrels a day to maintain fluid levels and gas/oil ratios.

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Courts

Reach agreement on East Texas river pollution control

Creation of an unofficial board of state officials to supervise anti-pollution measures within the watershed of the Angelina-Neches River system has been agreed upon by representatives of 53 oil-producing units in the Joiner sector of the East Texas field.

The state is threatening the operators with a permanent injunction originally filed November 10, 1939, in district court at Dallas, and if made effective may cause the suspension of production from numerous properties until other means can be developed to dispose of the salt water output. Preliminary hearing on the suit January 23 resulted in a 45-day probation period for the operators to make corrective measures.

The new agreement calls for employment of field inspectors to work under the direction of a special board to include a state health officer, representative of the game, fish and oyster commission, and the chairman of the board of water engineers. Operators will finance the field work through the payment of $1.50 per well monthly.

Operators may be required to install clay-lined pits that will prevent seepage and overflows and also accommodate water production during the summer and fall and dry season, averaging five months. A substitute plan is to maintain input wells that return the water to the Woodbine sand.

States seek to intervene in Elk Hills land case

Authorities of a number of states having public lands are seeking to intervene in the federal government's suit for recovery of Section 36 in the Elk Hills field, California, now pending before the United States Supreme Court.

Petitions for leave to intervene as amicus curiae (friend of the court) disclosed that the states are fearful that application of the principles asserted by the Interior Department might lead to loss of valuable lands now held by them.

Both the Standard Oil Company of California, holder of the lands, and the government have appealed from

lower court decisions awarding the property to the United States and assessing damages against the company.

Imports

Brown asks safeguards on excise taxes on oil imports

Charging that the United States Department of State had ignored the clearly-expressed intent of congress in negotiation of the reciprocal trade agreement with Venezuela, Russell B. Brown, general counsel for the Independent Petroleum Association of America, urged the Senate Finance Committee March 5 to safeguard excise taxes on imported oil from further attack by an appropration amendment in the legislation to extend the President's authority to make bargaining treaties.

Renewing the plea for protection which failed in the House of Representives last month, Brown told the committee that, during the consideration of the Reciprocal Tariff Act, the senate itself gave considerable thought to the question of the excise taxes and their possible use for bargaining purposes.

A definite provision taking those taxes out of the reach of the State Department, was abandoned, he said, when assurances were given that they would not be used as inducements to other governments to enter into reciprocal trade agreements.

Petroleum imports up slightly, exports down from year ago

Imports of crude petroleum in January, despite the concession in excise tax granted in the reciprocal trade agreement with Venezuela, were but 80,000 barrels more than receipts in January, 1939, it was reported last week by the United States Department of Commerce.

Receipts for the month totaled 1,948,000 barrels valued at $1,447,000, compared with 1,868,000 barrels valued at $1,241,000 in January of last year, the department announced.

January exports of oil and oil products, with the exception of lubricating oils, were under those of the same month a year ago, but while shipments of domestic products gave little evidence of war demand the department figures do not cover any shipments of oil brought into the country in bond for reexport. Reexports of all commodities during the month were valued at only $8,500,000.

Shipments of crude petroleum were reported as 4,202,000 barrels valued at $5,805,000, against 4,477,000 barrels valued at $5,815,000 a year ago; while exports of gas and fuel oil were placed at 2,520,000 barrels valued at $3,038,000, against 2,789,000 barrels valued at $3,361,000, and exports of motor fuel were 1,728,000 barrels valued at $6,321,000, against 2,720,000 barrels valued at $7,239,000.

Lubricating oil shipments, the only class to show an increase, were 1,060,000 barrels valued at $9,984,000, against 846,000 barrels valued at $5,482,000 in January, 1939, the department reported.

Associations

Three field trips supplement A.A.P.G. convention program

Three field trips have been arranged in conjunction with the twenty-fifth annual convention of the American Association of Petroleum Geologists, to be held in Chicago April 10 to 12.

Meeting in conjunction with the convention will be the Society of Economic Paleontologists and Mineralogists on April 11, and the Society of Exploration Geophysicists on April 9 to 11. Members of these groups have been invited to attend sessions of the A.A.P.G.

A preconvention field trip has been scheduled for Tuesday, April 9, to be conducted between Chicago and Morris, Illinois, to study the Silurian strata, including interesting reef structures in the dolomite, the Pennsylvanian beds, including the leaf-bearing nodules of the famous Mazon Creek area and the great overlap of the system onto the strata as old as the Ordovician, and the Pleistocene features of old Lake Chicago and the outlet. Registration should be made by Thursday April 4, with M. M. Leighton, chief of the Illinois Geological Survey, Urbana.

A post-convention field trip has been scheduled for Saturday, April 13, to study the La Salle anticline at La Salle, Illinois. This trip will deal chiefly with the La Salle anticline, the St. Peter sandstone and other strata, the unconformable relationship of the Pennsylvanian on lower Paleozoic strata, and the Pleistocene features of the district. These trips are being planned by the Illinois Geological Survey. Transportation will probably be by bus and car. A second post-convention trip will be conducted Saturday, April 13, by Ralph E. Esary, state geologist of Indiana, and Clyde Malott, University of Indiana, to the Kentland quarries of Indiana and the adjacent area.

Several university groups are arranging dinners for the evening of April 10. President Robert Maynard Hutchins of the University of Chicago will meet with University of Chicago alumni, and will address a larger meeting later that evening when the Chicago group adjourns.

The annual banquet will be held in the grand ballroom of the Stevens Hotel Thursday, April 11, at 7:30 p.m. Dancing will follow.

A special lounge at the Stevens Hotel will be provided for visiting ladies. Mrs. Carl B. Anderson, Mattoon, is chairman of the committee handling ladies' entertainment.

Other convention committee chairmen are Verner Jones, Magnolia Petroleum Company, Mattoon, general; A. H. Bell, Illinois Geological Survey, Urbana, technical program; J. V. Howell, Mt. Vernon, arrangements; M. M. Leighton, Illinois Geological Survey, Urbana, field trips; Carey Croneis, University of Chicago, technical equipment; E. W. Ellsworth, Centralia, finance; Don L. Carroll, Illinois Geological Survey, Urbana, publicity and exhibits; E. F. Stratton, Schlumberger Wells Surveying Corporation, Mattoon, dinner dance; L. M. Clark, Shell Oil Company, Centralia, registration and reception.

The Illinois Geological Society, most recent state group to affiliate with the A.A.P.G., is taking an active part in convention arrangements. Its officers are M. W. Fuller, president; Verner Jones, past president; B. Maxwell Miller, vice president, and J. G. Mitchell, secretary-treasurer.

Special train for geologists meet at Chicago, April 10-12

Announcement of a special train for accommodation of those planning to attend the twenty-fifth annual meeting of American Association of Petroleum Geologists in Chicago, April 10-12, has been made by Santa Fe Railway Company. A deluxe special will consist of modern equipment including club lounge, Fred Harvey diner, observation pullman and modern steel drawing room.

This train will start from Houston and can be easily joined as shown in the following schedule:

Lv. Houston		
Santa Fe Special	11:30 P.M.	April 8
Ar. Fort Worth		
Santa Fe Special	7:30 A.M.	April 9
Lv. Dallas, Special Bus	7:00 A.M.	April 9
Ar. Ft. Worth, Special Bus	7:50 A.M.	April 9
Lv. Corpus Christi		
Missouri Pacific	5:30 P.M.	April 8
Lv. San Antonio		
Missouri Pacific	10:00 P.M.	April 8
Lv. Austin		
Missouri Pacific	11:56 P.M.	April 8
Ar. Fort Worth		
Missouri Pacific	7:05 A.M.	April 9
Lv. Oklahoma City		
Santa Fe Special	12:50 P.M.	April 9
Lv. Ponca City		
Santa Fe Special	2:40 P.M.	April 9
Lv. Wichita		
Santa Fe Special	4:30 P.M.	April 9
Lv. Kansas City		
Santa Fe Special	10:10 P.M.	April 9
Ar. Chicago		
Santa Fe Special	7:00 A.M.	April 10

Oklahoma geologists to study Wichita mountains area

Advance registrations indicate more than 150 geologists and 50 students will make a two-day field trip arranged by the Oklahoma City Geological Society to study the Wichita mountains area of Oklahoma March 15 and 16. The trip is under the direction of Dr. C. E. Decker, University of Oklahoma.

A number of quarries, abandoned wildcat wells, diggings of old miners and historic spots will be covered in the itinerary. The group will meet in Lawton on the evening of March 14 for discussion of areas to be visited. The trip will start at daybreak March 15, and the party will return to Lawton that night by way of Ft. Sill. The second tour starting the following morning will take the geologists through Medicine Park and the Lake Lawtonka area. Special study trips will be made March 17 for those who desire to do more detailed work in the area.

Details of the trip are in charge of Graydon Laughbaum, chairman of the society's field trip committee. Lodging and meals are being arranged by Mabry Hoover, road logs and detailed transportation are being handled by Murray Wells, and registration is being handled by Jerry Newby and Matt Moorman.

Boost Sewell allowable

The allowable for the Sewell field, Young County, has been increased from 342 to 585 barrels daily, effective March 6, according to a new order of the Texas Railroad Commission.

MEN IN THE INDUSTRY'S NEWS

GEORGE S. BUCHANAN and George H. Harrington have formed a partnership for consulting work in geology and geophysics and have established headquarters on the thirteenth floor of the Esperson Building, Houston. Buchanan recently resigned as vice president of Adams Oil & Gas Company, Houston, where he was in charge of exploration. Harrington has been in charge of geophysical work for Barnsdall Oil Company with headquarters in Houston.

JOHN B. DAVIS and Clarence A. Cortner, gasoline plant operators for Carter Oil Company, have been granted leaves of absence to go with the M. A. O. R. T. Company in Hungary to assist in training personnel for gasoline plant operation in that country.

PERCY SPENCER, formerly with Oklahoma Pipe Line Company, Tulsa, is now with Andian National Corporation, Ltd., in Colombia, South America, as a pipe line engineer.

GENE HAUGHEY, former land department title man with Carter Oil Company at Tulsa, is now in the legal department of Standard Oil Company of Venezuela at Caracas, Venezuela, South America.

ALLISON BISHOPRIC, JR., West Canadian operator, was looking over Mississippi development last week.

H. W. STRALEY, III, of the geology department of Baylor University, Waco, Texas, has returned to his duties after a severe attack of influenza complicated by an ear infection.

E. W. LOUDEN, Pure Oil Company, discussed "New Developments in the Technique of Squeeze Cementing" before the Gulf Coast section of the A. I. M. E. in Houston last week.

C. W. JONES has retired as superintendent of Stanolind Oil & Gas Company at Wewoka, having reached retirement age. He was at one time superintendent for Midwest Refining Company at Salt Creek.

C. B. PETERS, JR., Edward C. Lawton and K. O. Herwig, all of Tulsa, have organized Consolidated Drilling Company as an Oklahoma corporation.

DR. MARVIN G. HOFFMAN, Tulsa, discussed "The Geologic History of the Billings Field, Interpreted in Terms of Isostacy" before the Tulsa Geological Society last week.

L. R. LAUDON, assistant professor of geology at the University of Tulsa, will discuss "Chilkoot Pass Today" before the Engineers Club at Tulsa at its noon luncheon March 18.

CHARLES FRANKS, engineer for Skelly Oil Company, has been transferred from Tulsa to Kansas City.

DR. BRANDON GROVE, geologist for Socony-Vacuum Oil Company, discussed importance of European oil fields in the light of war-time requirements of the various countries before the Oklahoma City Geological Society last week. Dr. Grove had been in Europe up to the outbreak of the war. He is now stationed in Oklahoma City with Magnolia Petroleum Company.

R. W. GEMMER, who recently transferred from Standard Oil Company of Louisiana to Carter Oil Company, has been placed in charge of the company's new $100,000 manufacturing plant and shop at Tulsa. Geophysical research will be handled by P. S. Williams, working under Dr. A. B. Bryan, head of the geophysical division of the exploration department.

JERRY SADLER, member of the Texas Railroad Commission, announced publicly last week that he is a candidate for governor.

H. H. ANDERSON, vice president in charge of public relations for Shell Oil Company, St. Louis, discussed "Oil in Illinois" before a civic organization at Evansville, Indiana, last week.

CECIL HAGEN, chief exploration geologist for Superior Oil Company of California, Houston, has resigned, effective March 15, 1940, to enter business for himself as consulting geologist, specializing in geological problems in the coastal region of Texas and Louisiana. He will be located at 2901 Gulf Building, Houston. Hagen has been connected with Superior Oil Company for five years and was appointed chief exploration geologist February 1, 1939. He was instrumental in discovering new deep production on the southwest flank of Jennings field, Acadia Parish; flank production on the west flank of Hackberry field, Cameron Parish; Grand Lake field, Cameron Parish, and most recently a new deep flank sand on the west side of Bayou Blue, Iberville Parish.

CECIL HAGEN
Enters Practice as Consulting Geologist

P. F. BROWN, manager of West Texas operations for Honolulu Oil Corporation, Ltd., with headquarters at Midland, has been elected a vice president of the company. He was stationed in the district as geologist to survey the Permian Basin before the company launched its initial operations in 1934. The company has succeeded in developing extensive production and proved acreage in the district.

H. B. BERNARD, with Sinclair Prairie Oil Company in a consulting capacity on production and other matters for the past four years, has resigned to establish a practice as consulting engineer. He had been associated with subsidiaries of Consolidated Oil Corporation since 1917.

DR. LUIS E. KEMNITZER, for several years geologist for the Petrol Corporation in California and formerly with the foreign department of Henry L. Doherty & Company in Canada and Germany, has established an office as consulting geologist at 704 South Spring Street, Los Angeles.

JAMES M. HEWGLEY has resigned, effective March 1, as vice president in charge of production for Transwestern Oil Company, to become associated with Slick-Urschel Oil Company in the same capacity.

E. F. MILLER, with Oliphant Oil Corporation at Shreveport, discussed "The Cotton Valley Field, Webster Parish, Louisiana," before the Houston Geological Society last week.

J. J. M'AULEY, purchasing agent for Oklahoma Pipe Line Company, has been transferred from Tulsa to St. Elmo, Illinois.

DIED:

FRANKLIN STANTON PROUT, geologist with Cities Service Oil Company, died February 21 at San Antonio, Texas, of complications following an appendectomy. Born in San Diego, California, December 5, 1889, Prout was graduated from Stanford University in 1912 with a degree in mining and geology. He was continuously engaged in his profession except for a period of service in the army in 1918, and spent 2½ years in geological and engineering work in Venezuela. He joined the staff of Cities Service Oil Company in April, 1924, and for the past five years had worked out of Bartlesville headquarters.

WALTER J. GUTHRIE, former secretary and since 1905 associate general counsel for Gulf Oil Corporation, died March 2 at his winter home in Miami, Florida.

DAVE J. FINLEY, 43, operator of Midland, Texas, died March 1 of burns received when a match he struck to light a cigaret ignited escaping gas from a stove.

Gasoline steady while fuel oil prices sag

The industry's markets have continued largely unchanged during the past 10 days, in response to developments of contrasting significance. Increased crude oil production has tended to disturb the crude markets in the Mid-Continent, and there are some expectations that under-market selling of crude again will break out.

The refined oil markets have been featured by continued resistance of gasoline prices to the depressing influence of large stocks. Refinery prices have not shown further decline for several weeks, despite the setting of a new all-time peak by the stocks each week.

This continued firmness of the gasoline market has offered some hope that prices might show the usual seasonal improvement with the advent of spring; although further uncertainty has been injected by the current exceptionally large crude production, which may tend to encourage over-refining and interference with spring and summer withdrawals from gasoline storage.

Natural gasoline has not shown any change in the past few weeks, prices having continued at low levels.

Fuel Oils Reduced

Some further easing off of demand for heating oils has resulted in lowering of quotations ⅛ cent a gallon by a considerable number of refiners and resellers. The stocks of the light fuel oils were reduced less in the week ended March 2 than in earlier weeks, despite curtailment of output at refineries, and the indicated slackening of demand led promptly to lowering of quotations by sellers who sought to maintain volume.

PRODUCT PRICES

	Range Late Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
62 Octane and under	3¾	4⅛	...	...
63-66 Octane	4	4⅜	...	...
67-69 Octane	4	4¾	...	...
70-72 Octane	4¼	5	...	...
Mid-Western Tank Car:				
62 Octane and under	3¾	4⅛	...	—⅛
63-66 Octane	4	4⅛	...	...
67-69 Octane	4¼	4¾	...	...
70-72 Octane	4⅛	5	...	...
NATURAL GASOLINE				
Grade 26-70:				
F. O. B. Group 3	2	...	...	...
F. O. B. Breckenridge, Texas	1¾	...	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	3¾	4¼	...	...
42-44 water white	3⅞	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	3¾	4¼	...	...
42-44 water white	3⅞	4⅝	...	...
FUEL OILS				
Mid-Western Tank Car:				
Range Oil	3¾	4	...	...
Gas and Fuel Oils:				
No. 1 Prime White	3¾	3⅞	...	...
No. 1 straw	3½	3¾	...	...
No. 2 straw	3⅜	3⅝	—⅛	...
No. 3	3¼	3½	—⅛	...
No. 5 (per bbl.)	65	70	...	...
No. 6 (per bbl.)	50	55	...	...

The markets for heavy fuel oils also have shown some weakness, because of slowing down of demand, resulting from lower rates of production by most industries since the beginning of this year. The latest weekly figures on stocks of residual fuel oils showed an addition to storage, in contrast with a small withdrawal in the previous week.

Kerosene and Lube

The kerosene market has gained strength in the past several weeks in anticipation of spring activity on the farms.

Standard Oil Company of Indiana effective March 7 advanced its tank wagon prices on kerosene and tractor fuel in the 7 Middle Western states where it operates.

The markets for lubricants have continued to show some signs of weakness, quotations having been lowered slightly further by some refiners in the Mid-Continent. Both neutral oils and bright stocks were affected, and reductions ranged from 1 to 2 cents a gallon.

Increased firmness of the gasoline market was evidenced late last week when Standard Oil Company of Indiana announced advances in its gasoline prices in Indiana.

The company's announcement stated: "Effective Tuesday, March 12, 1940, Standard Oil Company of Indiana will advance subnormal tank wagon markets on all three grades of motor gasoline to both dealers and consumers throughout the state of Indiana, except in its Chicago sales division, to within 1 cent of normal where the subnormalcy is in excess of that amount. No change will be made in markets which are 1 cent or less subnormal."

Refinery runs cut but crude output increased

Although crude oil production has further expanded to an exceptionally high level, refinery operations have been curtailed more, and there has been a beneficial effect on the gasoline situation, output at plants having been reduced and additions to storage having been brought down to more moderate proportions.

Production and Runs

United States crude oil production averaged 3,798,250 barrels daily in the week ended March 2, having increased approximately 66,000 barrels from the previous week's rate, and in doing so, having exceeded by 270,000 barrels the estimated average daily market demand of February. The new production rate was 14.6 percent above that of the corresponding week a year ago.

Crude runs to stills were cut back 45,000 barrels to an average of 3,445,000 barrels daily in the week of March 2,

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[4]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[4]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[4]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[3]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[2]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[3]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 3	3,498,800	3,395,000	239,380,000	89,337,000	26,861 000	102,536,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	102,344,000
February 17	3,717,950	3,570,000	238,928,000	93,985,000	25,876,000	103,424,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 2	3,798,250	3,445,000	.....	[1]98,364,000	25,015,000	103,521,000
March 4, 1939	3,314,850	[5]3,074,000	[4]271,758,000	85,596,000	28,544,000	112,404,000
Change in past year	+14.6%	+12.1%	—11.4%	+14.9%	—12.4%	—7.9%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, February 25, 1939. [5] Peak prior to 1939. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] February-March 1939 daily average. [9] Lowest since October, 1922, due to the shutdown of six Mid-Continent states.

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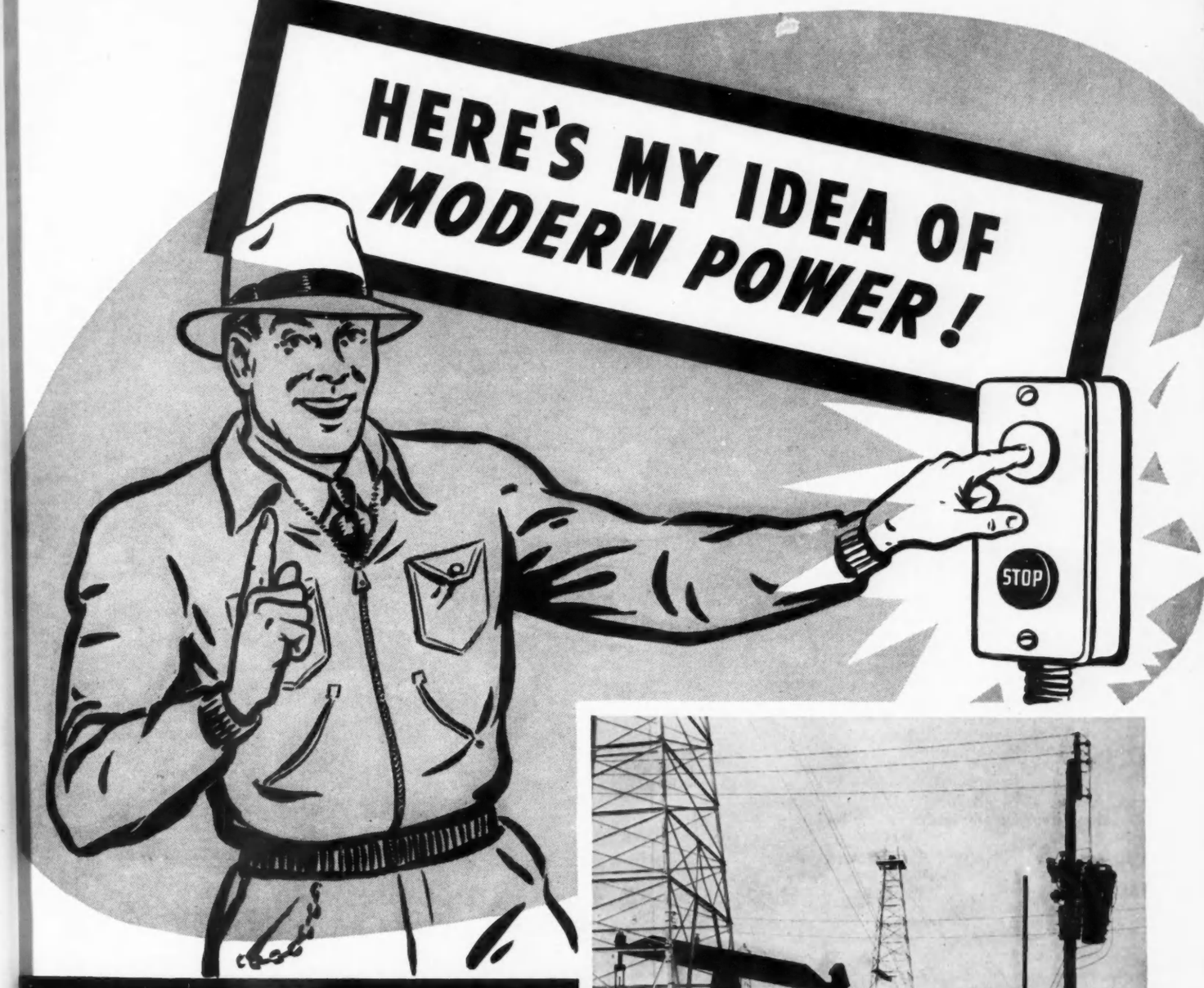

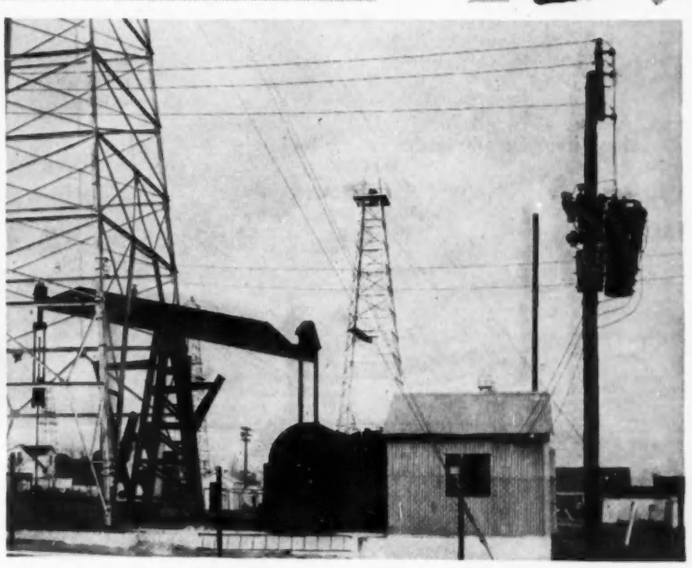

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but were, nevertheless, 12.1 percent above the February-March, 1939, daily average.

Gasoline Situation

The curtailment of refinery runs resulted in plant output of 388,000 barrels less gasoline in the 7 days ended March 2 than in the preceding week.

And the smaller production at the refineries permitted additions to stocks to come down to 1,645,000 barrels, as compared with previous additions of over 2,000,000 barrels weekly for an extended period.

Nevertheless, the gasoline inventory threatened to rise within another week approximately to 100,000,000 barrels, having reached 98,364,000 barrels on March 2. Stocks normally continue to increase until about the end of March, but there is a possibility that they now are near their peak of the year, as the recent slowing down of crude runs may have signified a scarcity of unused storage space.

The gasoline stocks now are 15 percent greater than at this time last year, whereas demand is only about 5 percent greater.

Fuel Oils

The curtailment of refinery runs may have been due, primarily, however, to the slowing down of demand for fuel oils.

In the week ended March 2 stocks of gas oil and distillate fuel were reduced only by the comparatively small amount of 375,000 barrels, having decreased to 25,015,000 barrels. They then were 12.4 percent smaller than one year previously. The demand for heating oil, principal item in the light fuel oil classification, has been running around 15 percent higher than a year ago.

Inventories of residual fuel oil reflected the continued retarded rates of industrial production of the country, those oils being used largely as fuel in industrial operations. The stocks heretofore have been diminishing, but in the week ended March 2 they increased 102,000 barrels to the level of 103,521,000 barrels. They then were approximately 8 percent smaller, however, than a year ago, whereas demand has been about 10 percent better.

High rates of crude oil production have resulted in additions to storage, despite large runs to stills. In the week ended February 24 the crude stocks increased nearly 2,000,000 barrels, according to the Bureau of Mines, having risen to 240,836,000 barrels. The present inventory is about 11 percent smaller, however, than that held a year ago.

Federal gasoline taxes up; lubricating oils down

Federal gasoline tax collections in January attained the highest level since last September, receipts being $19,228,329, compared with $17,000,709 in December and $16,429,873 in January, 1939, it was reported February 21 by the Internal Revenue Bureau.

Revenues from the levies on lubricating oils and transportation by pipe line also were at high levels, the former returning $2,615,468 against $2,306,046 in December and $2,199,019 last January, and the latter $1,049,642 against $769,064 in the preceding month and $792,339 in the corresponding month last year.

For the first seven months of the fiscal year, bureau records disclosed, revenues from the gasoline tax were nearly $11,000,000 above the same period a year ago, aggregating $137,655,427 against $126,658,391.

The return from the tax on lubricating oils, however, was $243,702 under a year ago, receipts being $18,718,231 against $18,961,933, but the collections from pipe line transportation were up $273,747, amounting to $6,592,239 against $6,318,492.

Southern Union Gas completes 31 miles of New Mexico line

Southern Union Gas Company has completed 31 miles of 5½-inch natural gas line from Albuquerque to Belen, New Mexico, providing service to Belen, and to Los Lunas and Isleta, located along the new line. Construction of the line, which crossed more than 100 roads and 32 main irrigation ditches, was started January 1 by Fredell Construction Company as contractor. Enameling of the pipe was handled by Pipe Line Service Corporation.

Bay Pipe Line Company completes short Michigan line

Bay Pipe Line Company has completed 19 miles of 4-inch pipe line from the Wise (Isabella) field station to the Buckeye (Gladwin) station, Michigan, giving the company a through pipe line route from the Wise field to the company's affiliated refinery at Bay City, Michigan. A 6-inch line was built from the refinery to the Buckeye field in 1938.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

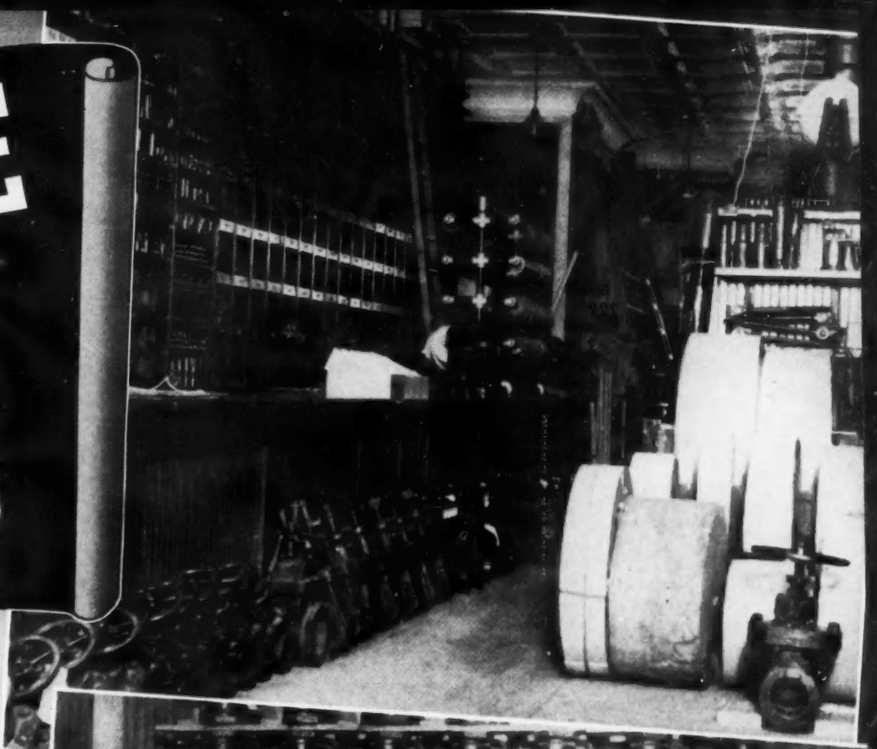
DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (March)	State Allowable in Mar.	BARRELS DAILY FOR WEEK ENDED Mar. 9	Mar. 2
TEXAS—				
Texas Panhandle	.....	.....	79,500	79,100
North Texas	.....	.....	105,650	105,900
West Central Texas	.....	.....	34,000	34,000
West Texas	.....	.....	253,600	257,550
East Central Texas	.....	.....	79,600	82,600
East Texas Field	.....	.....	484,100	457,350
South Texas	.....	.....	229,950	234,400
Texas Gulf Coast	.....	.....	238,950	244,750
Total Texas	**1,330,600**	**1,490,370**	**1,505,350**	**1,495,650**
CALIFORNIA—				
Long Beach	.....	.....	45,400	43,700
Midway-Sunset	.....	.....	61,200	45,300
Kettleman Hills	.....	.....	43,900	50,300
Wilmington	.....	.....	81,500	81,300
Others	.....	.....	384,000	364,600
Total California	**587,100**	**592,000***	**616,000**	**585,200**
OKLAHOMA—				
Oklahoma City	.....	.....	103,250	92,000
Seminole Area	.....	.....	104,600	94,400
Others	.....	.....	219,000	227,400
Total Oklahoma	**420,300**	**420,300**	**426,850**	**413,800**
ILLINOIS—				
Salem	.....	.....	259,475	261,100
Louden	.....	.....	71,125	77,350
Other New Pools	.....	.....	76,250	77,475
Old Pools	.....	.....	7,175	8,500
Total Illinois	**329,700**	.....	**414,025**	**424,325**

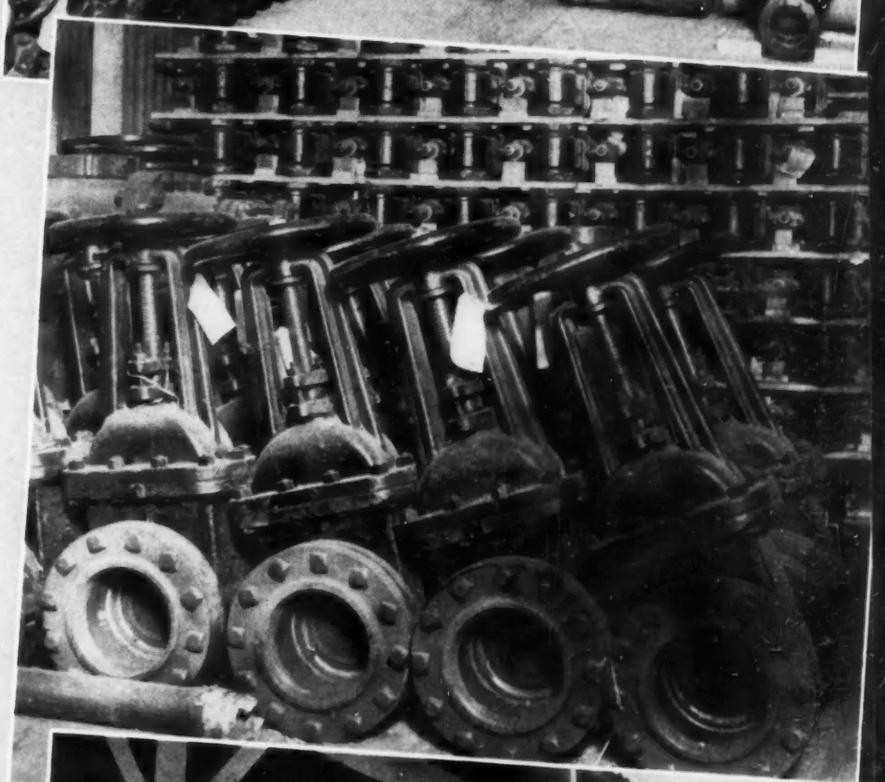
DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (March)	State Allowable in Mar.	BARRELS DAILY FOR WEEK ENDED Mar. 9	Mar. 2
LOUISIANA—				
North Louisiana	.....	.....	69,050	68,700
South Louisiana	.....	.....	212,000	211,000
Total Louisiana	**253,200**	**277,412**	**281,050**	**279,700**
KANSAS	**153,900**	**165,000**	**179,300**	**176,900**
NEW MEXICO	**103,200**	**114,000**	**113,500**	**112,400**
EASTERN STATES—				
Pennsylvania Grade	.....	.....	75,500	75,500
†Others, Eastern	.....	.....	35,400†	22,400
Total Eastern States	**111,700**	.....	**110,900**	**97,900**
MOUNTAIN STATES—				
Wyoming	60,600	.....	66,500	67,200
Montana	15,200	.....	16,900	17,200
Colorado	3,500	.....	3,950	4,000
Total Mountain States	**89,300**	.....	**87,350**	**88,400**
MICHIGAN	**64,800**	**65,000**	**63,900**	**64,850**
ARKANSAS	**65,500**	**70,000**	**69,250**	**69,500**
MISSISSIPPI	**1,300**	.....	**7,425**	**6,850**
NEBRASKA	.....	.....	.....	.....
‡Total 8 Prorated States	**2,978,600**	**3,194,082**	**3,255,200**	**3,198,400**
Total United States	**3,500,600**	.....	**3,874,900**	**3,815,475**

* Recommendation of Central Committee of California Oil Producers.
† Includes Indiana.
‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Michigan, Arkansas.

ADEQUATE FIELD STOCKS

At Jarecki Stores





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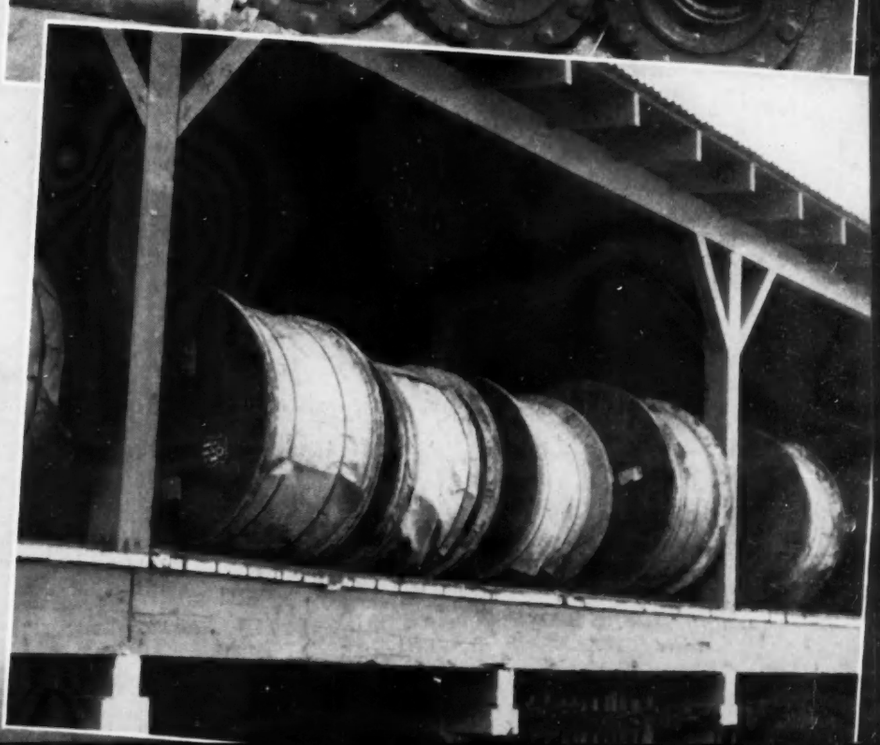

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WORLD-WIDE DEVELOPMENTS

Edited by WM. V. GROSS, Associate Editor

Rumor of Mexico-Sinclair settlement still persists

Unconfirmed reports from Mexico March 7 quoted a man supposed to be one of President Cardenas' closest advisors as declaring the chief executive would announce in a few days an agreement with Sinclair interests under which approximately 9,000,000 barrels of Mexican petroleum would be accepted as full payment for Sinclair's expropriated oil properties.

Terms of the rumored agreement are said to have been submitted to Mexico by Sinclair executives in New York through Mexican Ambassador Castillo Najera, who resides in Washington. In an interview granted in the border city of Brownsville, Texas, March 5, Najera was quoted as describing as "fantastic" a report from Washington that the Mexican government would make the first indemnity payment for oil expropriation in 60 days. In Mexico City, speaking of the rumored deal with Sinclair, he was quoted as saying that Cardenas would issue a statement before he left to return to Washington and that he expected to return March 11 or 12.

A rumor similar to the above cropped out February 20, but denial of knowledge of the settlement referred to therein was obtained by THE OIL WEEKLY from executive offices of Consolidated Oil Corporation, the parent company in New York.

Hopes of staying neutral grow dimmer in Rumania

Rumania's oil, proving more of a liability than an asset these days, seems to be weaving a paralyzing web around the country's economic life that can be broken only by definite alliance with either the Soviet-Nazi or the Franco-British side in the European conflict. It is becoming increasingly diffcult each day for the country to remain neutral; choice in such matters is being taken out of the Bucharest cabinet's hands.

Germany is receiving only about half the oil called for in contracts made with Rumanian interests. Frozen traffic lanes have been partly responsible for lack of deliveries, but the main fly in the ointment is felt to rest in the situation which found corporations reputed to be sympathetic with British and French interests in control of more than 70 percent of Rumanian production at the outbreak of hostilities. The government's suggestion that these companies make the oil available to Germany was not enthusiastically received.

Matters were complicated further when England demanded last week through Viorel Tilea, Rumania's minister to King George's court, full equality with Germany in sharing Rumanian exports, including oil, notwithstanding Germany had contracted for the lion's share of the oil available for export prior to the conquest of Poland.

While it will be impossible for Rumania to meet in full demands of both the Allies and Germany, an attempt to even approach such requirements would wreck Rumania's trade with neighboring Balkan countries, which is practically fait accompli already. Trade based on exchange between weak currency countries always suffers under conditions like those prevailing in Europe.

Both production and drilling were down in Rumania in 1939 as compared with 1938. Today's situation is not calculated to interrupt the trend.

Shell to continue Monte Oscuro exploration

Compania de Petroleo Shell de Colombia has announced a second wildcat will be drilled on the Monte Oscuro structure to attempt production from a 2500-foot sand cased off in Monte Oscuro 1. The first test recently was abandoned at 9150 feet, and unconfirmed reports were that it made salt water.

The company's strike on the Monte Oscuro anticline represents the most important development resulting from 9 wildcats drilled in Colombia during 1938 and 1939. It has caused Compania Nacional del Carare, a Colombian corporation in which Tropical Oil Company is heavily interested, to announce location of a test on Monte Oscuro with the 2500-foot sand presumably as the objective. Tropical Oil Company at the same time announced it would abandon No. 2, a wildcat on the San Fernando structure.

These developments have focused attention on the Middle Magdalena Valley again which, due to a series of purported dry holes, had been suffering for about a year in comparison with interest shown in the Lower Magdalena Valley where five major companies have been carrying out a program of large scale lease and concession acquirement.

Cerro de Monte Oscuro is a ridge 17 miles long lying in an almost north-south direction, with its northern extremity eight miles in from the east bank of the Magdalena River and northeast of Nare. It is an assymetric anticline rising on Shell's 122,000-acre Carare concession on the north, continuing for about 6 miles through Compania Nacional del Carare's Union concession, and plunging to the south in what may be a saddle at the Baul River on the Shell's 123,000-acre Mora concession.

To resume drilling on wildcat in Chihuahua

Juarez Petroleum Company will resume drilling by March 16 on a wildcat in the State of Chihuahua, Mexico, as soon as a rotary rig borrowed from the government can be set up at Mesa 1, which encountered a strong show of gas at 800 feet, according to J. Hernandez Ojeda, president.

Objective depth of Mesa 1 is between 1500 and 2000 feet.

No prohibition against exports of petroleum to U.S.S.R.

While declaring there have been no exports of gasoline to Russia for military uses, the State Department last week said that if the Russian government were to attempt to purchase aviation and other military gasoline in this country there is no provision of law under which shipment could be prevented.

The views of the department were made known by Secretary Cordell Hull February 19 in a letter to Representative Frank E. Hook, of Michigan, who had inquired as to the military purchases of the Soviet in this country and what steps, if any, could be taken to halt them.

"According to available records, there were no exports of oil to the country in question during 1939, other than a nominal amount of lubricating oils valued at $94," Secretary Hull stated.

"There were no exports of aviation gasoline to the U.S.S.R. during 1939 or during January, 1940, with the exception of two barrels for experimental purposes. Exports of regular gasoline during 1939 amounted to 883,530 barrels, all of which went to Siberia and were exported during the months of September, October and November. Heavy shipments of gasoline to Siberia during the autumn are not unusual.

"There were no exports of gasoline to the Soviet Union during December, 1939, although approximately 75,000 barrels were exported to Eastern Siberia during January, 1940.

"There is no existing legislation which authorizes the prohibition of the export of petroleum products to the U.S.S.R. or to any other country," the secretary declared. "Before such exports could be prohibited, new legislation would be required. Furthermore, the mere severance of diplomatic relations with the Soviet Union would not prevent the sale and export of petroleum products to that country."

The secretary explained, however, that the department has taken steps to discourage the further delivery of plans, plants, manufacturing rights or technical information required for the production of high quality aviation gasoline to countries "the armed forces of which are engaged in the unprovoked bombing or machine gunning of civilian populations from the air."

Statistics compiled by the Department of Commerce show that while exports of gasoline during the months of September, October and November totaled only $1,949,000, they comprised only a small part of total Russian purchases of strategic materials and machinery essential for war industries during the last four months of the year.

U. S. FIELD OPERATIONS

ON a 22,000-acre block that may be the bottom of an Oklahoma lake, a wildcat flowed 70 barrels of high-gravity oil in 14 minutes through ⅜-inch choke. The strike, 7 miles east of Madill in Marshall County, is producing from the Tulip Creek, in the Ordovician age, below 4850 feet. The lake may be formed by the proposed Denison-Red River dam.

Four scattered Illinois wildcats commanded attention last week. A Jasper County test had 240 feet of oil in hole from the McClosky. Pump was being installed to test a Hamilton County wildcat that had Cypress sand saturation. Once abandoned, a Gallatin County test was making 75 barrels of oil and 50 barrels of water from the Aux Vases sand. A north Wabash County pool opener filled a 500-barrel storage tank in 27 hours with oil from the McClosky. Extensions loomed for Dundas and Lake Centralia-Salem fields, and for Devonian pay at Centralia Townsite.

Like the McClosky play which a year ago swept into Indiana from the Illinois sector of the Illinois Basin, Devonian exploration has also spread across the line into the Hoosier state. Majors and independents are sharing in the deep exploration.

The third prolific Bend lime strike in Montague County, North Texas, is indicated by preliminary test given a wildcat in the northwest part of the county. A new depth record also is involved.

In East Texas, Camp County has a wildcat proposing production from the Lower Trinity. This location is over 20 miles north of the big field. It is the first well of appreciable depth drilled in the area.

Southwest Texas' search for Sparta-Wilcox production was at critical stage as the week closed. A second sand, producing oil, has been found at Wade City, and a new field was opened in Guadalupe County.

A well ¼-mile north of production at Lance Creek was completed for 70 barrels an hour in the second Minnelusa sand to rank among the Wyoming field's leading wells. Extension tests on the east and northwest sides were drilling. Moderation of severe winter weather is bringing renewed activity to Montana fields.

As the 6-month-old Tinsley Dome, Mississippi's only oil field, completed its 25th oil well, locations were staked for three wildcats projected to 5000 feet. Two will go down in Madison County and one in Clarke County.

Two wildcats in South Louisiana were closely watched as potential field openers. Two sands below 3000 feet in a St. Mary Parish test were revealed by electric log. Drill-stem tests between 7000 and 8000 feet were encouraging in an Iberia Parish wildcat. This district has still to see its first new field for 1940. New sands were opened in several fields last week.

A geophysical wildcat prospect in Miller County, Arkansas, was preparing to run formation tester following a showing in the Blossom below 2900 feet. It had been projected to the Smackover.

An active leasing campaign has followed a shallow Traverse lime strike in Ottawa County, Michigan, as the discovery indicated a 150- to 250-barrel pumper. A Clare County wildcat was dry in the Dundee.

Illinois

Four scattered wildcats and 3 extension tests draw interest

Centralia, Ill.—A Pure Oil Company wildcat in Jasper County, Warren Consolidated 1, c E½ NE NW 33-6n-10e, 7 miles south of Newton and 9 miles north and east of the Dundas field of north Richland County, had 240 feet of oil standing in the hole late last week. A company official said an undetermined amount of McClosky lime saturation topped at 2847 feet had been recovered and that the well would apparently make a light producer.

Kingwood Oil Company was completing what appeared to be a pool opener in Hamilton County. Wilson 1, NW NW SE 6-6s-7e, had Cypress sand at about 2860 feet and was installing pump. The well probably will make a light producer. The company has staked a diagonal offset, Dodd 1, in SE SE NW 6-6s-7e.

A Gallatin County well previously abandoned was producing some oil. Donald Colbeck's Martin Duffy 1, NE NW NW 25-8s-9e, was making about 75 barrels of oil and 50 barrels of water daily from Aux Vases sand at 2805 feet. The test was drilled by Eason Oil Company, and taken over by Colbeck.

A pool opener in northern Wabash County, near Lancaster, Wolf Brothers et al's Herbert Seibert 1, Section 4-1n-13w, filled a 500-barrel tank flowing through open casing in about 27 hours. Producing from McClosky, it is 12 miles from other new Illinois production.

Production in the Dundas field of northern Richland County may be extended a mile south. Electric log was run at Dyson-Anderson's Ash 1, SW 18-4n-10e, which cored McClosky saturation at 2928-39 feet, and Aux Vases pay at 2880-85 feet. Casing was to be cemented.

The Texas Company Norman Davis 1, NW NE NE 21-1n-2e, ¾ mile south of the Lake Centralia-Salem field, topped Benoist sand at 1915 feet and found a showing of oil and water. The test, at an elevation of 550 feet, is drilling below the McClosky. Kingwood Oil Company cemented casing at 3597 feet in Shanafelt 4-C, a north Devonian outpost in this field, NW 16-2n-2e, ¾ mile from other Devonian production. The pay area of the deep lime was found in the neighborhood of 3400 feet at wells further south in the field.

There have been 112 Devonian wells completed in the Salem field which are yielding 155,000 of the pool's daily production of 260,000 barrels. Since the formation was discovered productive a little more than four months ago, it has yielded 5,600,000 barrels of crude. Between 80,000 and 100,000 barrels of shallower production has been shut in so operators can run as much flush Devonian production as possible through congested pipe lines. Recent completions in the field, most of which were in the over-drilled areas of Sections 20 and 21, 2n-2e, have been much smaller than the first wells drilled there.

The Centralia townsite Devonian play was given a slight western extension when Clint Crosby's Marshall 1 recovered 7½ feet of saturation and cemented casing. There have been 23 Devonian completions in the field where there are now 81 operations.

Carter Oil Company's James H. Seaman 1, NW NE SW 23-12n-7e, Coles County wildcat, was fishing for drill stem lost as the company was coring Devonian lime. Three cores in the formation, recovered between 3171 and 3211 feet, carried traces of oil but none of them were considered commercial.

In Crawford County, La Salle Drilling Company's Berryhill 1, NE NE NW 9-6n-13w, 5 miles west and south of Robinson and at the apex of the La-Salle anticline, was coring for Devonian at about 3000 feet. It is near Illinois' first major oil field, opened in 1904, which has 13,000 shallow wells with a combined daily production of less than 8000 barrels.

Indiana

Illinois Devonian play spreads into southern Indiana

Evansville, Ind.—Like the McClosky play which over a year ago spread southward into Indiana, Illinois' spectacular Devonian production has spurred deeper Indiana tests.

In Greene County, 3 miles south of Worthington, Lyons & Schricker's Della Kisser 1, NW NW 4-7n-5w, was a rank wildcat location. It will test the St. Peter to a contract depth of 3200 feet. Wilson Drilling Company, contractor, was rigging up cable tools. About 10 miles south there was some oil and gas development in the Devonian during 1922-23 in the Lyons field, now abandoned.

About 8 miles north into Owen County, a wildcat location for a Devonian test has the backing of several independents and major companies. Everhardt 1 in NE SE 21-9n-5w, will be core-drilled by Harry Schwarz, Evansville. Those interested include Sun Oil Company, on whose geology the location was based, Kentucky Natural Gas Company, Mahutska Oil Company, Tide Water Associated Oil Company, Seaboard Oil Company, Palmer Corporation, Joe Bander and Ray Ryan. The Devonian is expected at about 1700 feet.

In Sullivan County, 1¼ miles northwest of Shelburn, Niagara Oil Corporation was rigged up for the J. R. Riggs 1, wildcat Devonian test in NW 33-9n-9w. West of Carlisle, Sullivan County, J. S. Young et al were spudding Shepard 1, wildcat in CN½ SE NE 13-6n-10w.

Wildcat Moved

In Spencer County, Harrison Township, Ohio Oil Company's location for a Devonian test has been moved to the west. Holtzman 1, NE SE SE 28-4s-4w, southeast of St. Meinrad, was drilling below 650 feet, expecting Devonian at about 2200 feet.

Drilling slowly with cable tools at about 1100 feet, in the upper Chester series, Sun Oil Company's Martha Utt 1, C Donation 182-4n-9w, was reported headed for the Devonian. It is 2 miles southeast of Bruceville.

In Marrs Township, Posey County, north outpost to the Teusler Dome field, Kally Drilling Company's H. A. Horn 1, SE SW NW 1-7s-12w, was drilling at 1785 feet, expecting the Tar Springs at about 1800 feet.

In the South Griffin field, Posey County, Somers & Egan's Keck 3, NW NE 34-3s-14w, was showing for a Tar Springs producer with casing set to 2128 feet. With the exception of an 11-foot shale break, saturation was cored from 2130 to 2151 feet.

On the eastern side of Griffin, Gibson County, Papoose Oil Company set casing to Cypress sand at 2489 feet for Cooper C-2, CE½ NE NW 18-3s-13w. Total depth is 2493 feet. It will drill in with cable tools.

Illinois Side

Superior Oil Company was completing its first McClosky producer in the New Harmony pool, H. C. Ford 16, NE NE SW 4-5s-14w, just southeast of Sun Oil Company's Greathouse 1, first McClosky producer in that immediate area. To the north, in Hawthorne Township, White County, Sun Oil Company's Charles Ford 1, CW½ NW SE 18-5s-14w, was completed for an estimated 15 barrels an hour, natural, in the McClosky.

On the Wabash County, Illinois, side of the Griffin field, Longhorn Oil Corporation's Mary Heil 3, in the Schuh Bend area, was completed for a light Cypress sand producer.

Two wildcat failures in week; slowed by weather

Two wildcat failures against two small pool wells was the score in Western Kentucky last week. The area's most important field, Utica, in Daviess County, still was mostly inactive because of road conditions.

In the Lewisport section of Hancock County, Ohio Oil Company's George Edwards 1, Section 23-R-31, near Waitman, was abandoned at 1131 feet with sulphur water in the hole.

In Muhlenberg County, 2 miles south of the Belton pool, Shearn Coal Company's Pratt 1, Section 2-H-30, was also drilled into sulphur water and was abandoned at 1600 feet.

In the Cane Run section of Daviess County, Cane Run Petroleum Company's Jackson 15 Section 3-M-31, was completed in the Jett sand at 655 feet for an estimated 18 barrels a day after shot.

In the Corydon section of Henderson County, Sun Oil Company was completing Corydon Unit 3 (Sudie Mason) in the McClosky for an estimated 50 barrels a day natural. It will be acidized.

A year-old location on Harris Island, Henderson County, opposite Mt. Vernon, Ind., Yandell Rogers' Harris 1, Section 3-Q-20, was abandoned. Derrick had been up for several months.

Oklahoma

Marshall County wildcat flows 70 barrels oil in 14 minutes

Tulsa.—Pure Oil Company's Little 1, W½ NE SE 28-5s-7e, 7 miles east of Madill pool in southern Marshall County, provided an important strike when it flowed 70 barrels of high-gravity crude in 14 minutes through ¾-inch choke on a 2-inch flow line. Packer was set at 4902 feet and a 22-minute drill-stem test taken at 4951-61 feet. Tulip Creek, a section of the Simpson Dense and Bromide of Ordovician age, topped at 4850 feet, is the producing horizon.

The wildcat is on a 22,000-acre block in Marshall, Johnson and Bryan counties. The area will be inundated by a lake formed by the proposed Denison-Red River dam, should construction of the dam be permitted.

Hunton lime showed possibilities at Helmerich & Payne's Kramer 1, NWc SW 24-17n-1e, 2 miles south of Coyle (Wilcox) pool, Payne County. Porosity was good at 4743-48 feet while saturation at 4748-66 feet was encouraging. First Wilcox sand, topped at 5014 feet, was salty and nothing is expected in the second zone. The lime show will be tested. Helmerich & Payne's other Logan County wildcat, McMahon 1, SWc SE 31-17n-1e, 1 mile north of South Langston pool, went to 5435 feet in the second Wilcox sand for salt water. An electric log showed fair saturation in the upper sand, and perforations will be made.

T. N. Berry completed a recent pool discovery at Slick 1-A, NW SW SE 24-18n-4e, 1½ miles east of Broyles pool, Payne County, for a flowing potential of 200 barrels daily through tubing perforations at 2883-2955 feet. Big lime and Oswego lime were pay zones.

Two Lincoln County wildcats were abandoned. George Travis et al's Teter 1, NWc SW 24-17n-2e, 3 miles west of Sporn pool, was dry in the Wilcox sand at 4779 feet. Harper-Turner's Mann 1, NWc SE 23-14n-5e, 2 miles south of Davenport field, was void of showings in Prue at 3425 feet and hole was carried to 4106 feet. Summit Drilling Company et al's Cleer 1, CW½ SE SW 6-15n-5e, reported only a slight show in Oswego lime. Pipe has been set at 3460 feet from a plug-back depth of 3510 feet. It is 6 miles northwest of the Davenport area.

A seismograph high will be tested by Clayton Anderson's Wentz 1, NEc SW 11-22n-2e, wildcat 2½ miles north of Otoe City pool, Noble County. Stanolind Oil & Gas Company and Amerada Petroleum Corporation farmed out the 820-acre block. The test is a west offset to a 3285-foot dry hole which did not test the Simpson zone.

What was first believed to be a dry hole may open a new horizon for the south flank of the St. Louis pool, Pottawatomie County. Denver Producing & Refining Company's Herford 1, CN½ N½ SE 2-6n-4e, shut down for several months, headed oil when 9-inch pipe was shot off at 3400 feet. Pay is believed to be the Earlsboro or Calvin sands. H. L. Berkey et al's King 1, C SE SW 2-11n-6e, wildcat 2 miles north of Keokuk pool, topped the Mayes at 4038 feet and was deepening. Berkey staked location for Wilson 1, NWc 4-11n-6e, 6 miles southeast of South Wilzetta pool.

Republic Natural Gas Company made two locations on the Hugoton gas structure in Texas County: Hampsten 1, NE SE NW 13-6n-16e, and Jackson 1, SEc NW 16-3n-15e.

Magnolia Petroleum Company's Fiekes 1, C SW SW 31-18-14w, Dewey County wildcat, tested at 7665-7724 feet to recover only 1100 feet of mud with an odor of gas. It is deepening.

Sinclair Prairie Oil Company was fishing for 13 joints of drill pipe in German 1, SE NW NW 1-6n-13w, at 9870 feet, lower Simpson sand. This deep wildcat is 6 miles southeast of Carnegie, Caddo County.

South of Byars pool, 4 miles, Roy Starr Oil & Gas Company was moving in materials at Skii 1, NWc NE 8-4n-3e, Garvin County. L. A. Carpenter staked location for Fife 1, NW SW SW 28-18n-11e, near production in the Sapulpa area, Creek County.

Kansas

New sand and new pool indicated in Barton County

Wichita.—The Texas Company has opened a new producing horizon in the Krier (Basal sand) pool of Barton County. South of this pool ¾ mile Janssen 1, CE½ NE SE 31-16-11w, established a 24-hour potential of 534 barrels after acidizing with 1000 gallons. Gravity tested 54.2, corrected, from the Arbuckle lime at 3331-41 feet. A semi-wildcat in the area was starting, George W. Hinkle's Rous 1, CE½ NE NE 32-16-11w. Offsetting a recent wildcat strike in Barton County, Black & Marshall were drilling below 2000 feet at Dolecheck 1, CN½ NW NE 24-16-12w.

Phillips Petroleum Company's Wondra 1, CW½ SW NE 15-17-12w, plugged back from watery Arbuckle lime to 3054 feet. Seven-inch pipe was cemented and when plugs were drilled to 3090 feet in Lansing lime, topped at 3049 feet, the hole filled 450 feet with oil. This wildcat is southwest of the Krier pool, Barton County, and may open a new pool for the county.

Hartford Oil Company, Denver, staked location on a 9000-acre block for Morris 1, SEc NE 28-25-31w, Finney County, western Kansas. Nearest commercial production is the Shallow Water pool in Scott County and it is 20 miles east of the Holcomb gas pool in the southwestern part of the county.

Lauck & Moncrief et al's Ehler 1, CWL SW NW 35-16-10w, southeast of Stoltenberg pool, Ellsworth County, plugged back to 3315 feet where hole filled 200 feet with oil. Previously the wildcat had 550 feet of 44-gravity crude before being bailed dry. It may be reacidized before a production test in the Arbuckle lime.

Gulf Oil Corporation's Redetzke 1, SEc NE 19-16-11w, extended Prusa pool, Barton County, ¾ mile west. Tubing is being run to Arbuckle lime at 3333-41 feet, prior to acidizing. A swabbing test recovered an undetermined amount of oil.

An outpost ½ mile east of the Roxbury pool, McPherson County, promised to extend that pool. G. H. Bunting et al's Zeitlow 1, SW NE SE 17-17-1w, will drill plugs in saturated Chat, topped at 2638 feet. Republic Natural Gas Company has a rotary rig at McMillan 2, CN½ SW SW 7-20-5w, North Bornholdt pool.

An east offset has been staked for the Bow Creek discovery in Phillips County. Hess et al's Kincaid 1, SW NW NW 30-5w-7w, completed cellar and pits. Joe Garden et al's Rahn 1, NWc SW 13-34-5e, completed rigging up and will drill for the Bartlesville pay in the Rahn pool, Cowley County. Southwest of the Gurney pool, Russell County, Simpson Oil Company et al's Deines 1, CW½ NW SW 33-14-14w, was a location.

A. M. Landon and Atlantic Refining Company abandoned Coen 1, NWc NE 15-23-14w, in Arbuckle lime at 3985-4003 feet. This wildcat was 8 miles northwest of the St. John pool, Stafford County. Pryor & Lockhart's Vanderplas 1, NWc SE 18-31-13w, 2 miles south of Lake City pool, was abandoned at 4604 feet in Arbuckle lime.

Sunray Oil Company continued to pick up saturation markers at McMillan 1, CWL NW NW 14-29-2w, north of Clearwater, Sedgwick County. Mississippi showed fair at 3566½-74 feet, and was based at 2875 feet. It was coring below 3950 feet and will go to the Simpson.

Kansas has 23 oil wells

Twenty-three oil wells were completed in Kansas during the past week for a total initial potential of 32,405 barrels daily. One gas well in the Cunningham pool, Kingman County, gauged 92,000,000 cubic feet daily. Failures numbered five. Field activity surged with 41 stakes driven. Barton, Ellis, Rice and Russell counties had 8 each, Cowley County had 3, Greenwood County 2, and Ellsworth, McPherson, Phillips and Stafford counties had 1 each.

Rule "Gastex" is carbon black

Federal Judge R. J. McMillan handed down a decision in Austin last week holding that "Gastex," a product produced chemically by the General Atlas Carbon Company, is carbon black within the meaning of Texas statutes, and, therefore, subject to tax.

State Comptroller George H. Sheppard demanded the tax from the company, and it had been paid under protest. Suit was brought by the company in an effort to recover the taxes, company attorneys contending the product was not described in the statute as carbon black. Testimony in the suit, however, showed the product was used for many of the same purposes.

Forest City Basin

Nebraska sector of Basin to see more development

St. Joseph, Mo.—Nebraska's sector of the Forest City basin goes into spring with the greatest chances of early development, since it has the first oil, although its second well is dry and its first is not producing. There are indications the first well will not be put back on production until it is deepened at least to Ordovician lime.

Both Nebraska wells were drilled by Pawnee Royalty Company of Odessa, Texas, with Ferndale Drilling Company, Odessa, as contractor. The second test was Meyer 1, about 3½ miles southwest of Falls City, Richardson County, and 1¾ miles southwest of Boice 1, the discovery well. After an oil showing in Ordovician lime, Meyer 1 went on to Arbuckle and was abandoned at around 3550 feet. The Ordovician showing in Meyer 1 indicates Boice 1, which is higher on structure, may make a better producer in the Ordovician than it did in Devonian. After acidization with 2000 gallons at 2287 feet, operators took about 100 barrels of oil daily from the Boice 1 through flowing and pumping. The well yielded three times that much water.

No offsets have been drilled and none have been announced. Location of the second well was made in compliance with a lease requirement.

Forest City Basin Syndicate, of Lincoln, Nebraska, has erected derrick a mile southeast of Salem for Windle 1, C NW SW 11-1n-15e, Richardson County. North of Falls City 2 miles west and 1½ miles north, in the same county, Ed Jackson, of Atchison, Kansas, is planning to spud a well by March 15 in SW 32-2n-16e, 2½ miles north and ½ mile east of the discovery. West of Falls City 15 miles, Ed Uhri and H. C. Stephens, of Humboldt, Nebraska, drilled Stauffer 1 to 550 feet, but have been shut down since late December. These operators have some equipment on the ground for another test 10 miles west of Falls City.

State Geologist Buehler and Assistant State Geologist H. S. McQueen of Missouri predict at least 30 more oil and gas tests this spring and summer in the basin.

Two new wells have been started in Missouri. C. R. Gallemore, of Moberly, Missouri, is drilling Buckler 1, 2 miles south of Highbee in SW NW 22-52n-14w, Randolph County, below 550 feet. In DeKalb County, 5 miles south of Union Star, E. H. Lawhon et al's Gottschall 1 was spudded. A light rig was moved in as operators met a deadline.

Three wells are active in northeast Missouri and others probably will be drilled soon on the basis of Devonian lime showings in the region. Johnson 1-A of T. E. Baldwin, Wichita Falls, Texas, failed to produce, however, when casing was cemented at 1068 feet for a test. The Schuyler County test in NW NE NE 21-65n-15w had apparently been drilled below the show, and was being deepened to the Arbuckle. Two wells in Adair County are at shallow depths. No new developments have taken place in Knox County since abandonment early in February of W. H. Oberthier's Campbell 1 at 918 feet in Arbuckle lime.

Holt County, Missouri, adjacent to Nebraska, has one active test, Brin & Nathan's Decker 1, shut down at 1056 feet awaiting 10-inch casing. Bottomless roads have prevented delivery. The test is 5 miles east of Mound City.

George Vincent's Dillingham 1, 25 miles south of St. Joseph, C NE SW 16-53-34, Platte County, was resuming after a long shut down at 1025 feet, just above Mississippi lime. American Oil & Gas Corporation, of St. Joseph, is digging cellar 4 miles south and ½ mile east of Amity, De Kalb County. Thompson 1 is in SW SW 30-58-31.

Kansas Sector

Latest Kansas Development has been in Brown County where Phillips Petroleum Company is moving in equipment for a slim-hole rotary test for Knudson 1, NW SW 27-3s-18e, 7 miles east and

6 miles south of Hiawatha. Carter Oil Company drilled a slim-hole test 12 miles south and 2 miles west of Hiawatha in 1939.

In Jefferson County, Kansas, a fishing job was delaying McLaughlin Sons' McLaughlin 1, SW NE NW 4-10s-20e, a mile northeast of McLouth. Bottom was at 1918 feet. Mississippian showings failed to produce when acidized. The well will be completed as a gasser in Bartlesville sand at 1455 feet. There is 8,000,000 cubic feet at that point.

Iowa has only one active test, Phillips Petroleum Company's Creston 1, 10 miles south of Creston in Union County. It has been drilling wet, making only twenty-four to thirty feet a day during the past 2 weeks. The test is below 2253 feet.

Schedule 11 Texas hearings

The Texas Railroad Commission has scheduled the following hearings to be held in Austin:

March 11, application for an increased allowable for the Birdwell field, Jack and Young counties.

March 13, application for an increased allowable for the W. N. Hunter 1, in the Arthur Blake Survey, Hitchcock field, Galveston County.

March 14, hearing to consider spacing rules for wells in the new Cedro Hill field, Duval County.

March 15, application of Lanning & Coffield to produce under vacuum wells in the Chapman Abbott field, Williamson County.

March 18, application of Sinclair Prairie Oil Company for special field rules around its A. P. Howard 1, in the William Wallace Survey, Montague County; hearing on spacing rules for the Tobarg field, Pecos County, originally scheduled for March 4.

March 20, monthly statewide proration hearing.

March 21, application for revision of operating rules for the Avoca field, Jones County; for the Griffin field, Jones County; application of Deep Oil Development Company to increase the allowable on Waggoner Estate "B," Nos. 1 and 2, Archer County, and application of W. P. Luse to operate a repressuring plant in the Payton field, Yates sand area, Ward County.

Oklahoma starts top completions

Oklahoma completed 21 wells during the past week, including 14 oil wells, with a combined initial potential of 4717 barrels, and 7 dry holes. Thirty-one new locations mere made: Pontotoc County reported 5, Caddo, Seminole and Wagoner counties had 3 each, Jackson, Okmulgee, Pottawatomie, Creek, Osage and Payne counties had 2 each, and Hughes, McClain, Muskogee, Garfield and Kay counties reported 1 each.

20-acre spacing for Emma

Twenty-acre spacing for wells in the Emma field, Andrews County, is provided in a new order issued by the Texas Railroad Commission. Wells may be spaced 330 feet from lease lines and 660 feet apart.

West Texas

West edge deep test extending North Cowden

Midland, Texas.—Recovery of an aggregate of 21 feet of oil saturation in the Holt pay by the fifth deep test on the west edge of the North Cowden field, Ector County, gives promise of a successful oil completion that would expand the length of the lower pay to 6¾ miles. The new prospect is Landreth Production Corporation's T. P. Land Trust 2-A, NWc T&P Section 3, Block 43, T-1-N, which entered the Clear Fork lime at 5146 feet, with an elevation of 3084 feet, and drilled to 5196 feet. First oil saturation was logged at 5165-70 feet with two additional zones below. Tubing is to be run with packer to exclude open hole below 7-inch casing seat at 3972 feet before attempting a production test. However, if the well indicates commercial production a new string of pipe will be run to protect the regular Permian producing horizon.

Landreth Production Corporation's test is the lowest of the group on structure, having logged top of lime 31 feet lower than the nearest deep well, situated 1½ miles to the northwest. It is 16 feet below the water level established by Gulf Oil Corporation's Holt 1, the discovery. This pending completion is being watched with particular interest as it may refute the theory that production from the Holt pay is not present down-dip on the structure and under the main portion of the field's regular Permian area. Stanolind Oil & Gas Company's W. F. Cowden 1, most northwesterly deep test, is erecting pumping unit after showing for a small oil well after plugging back from water at 5237 feet.

A second deep test has been authorized for Andrews County to try for production in the Holt pay, and another project is pending. Illinois Oil Company's University-Atlantic 1, C NW NW Section 14, Block 12, has moved in heavy rotary to fulfill a 5600-foot depth contract. Richmond Drilling Company and Tom Hunter's University-Atlantic 1, C NE NE Section 21, Block 11, is making progress in clearing up fishing job at 5172 feet. Fred Wright and J. W. McMillan are negotiating for a deep test on the E. P. Cowden ranch, near NE PSL Section 14, Block A-55, being east of an 8012-foot failure drilled in 1938. The latter encountered oil saturation at 7665-95 feet and 7710-45 feet, but failed to indicate oil production when tested through casing perforations.

An abrupt termination of production on the northwest edge of the Seminole field, Gaines County, is threatened by Humble Oil & Refining Company's Auten 1, C NE SE Section 267, with the hole bottomed at 5360 feet. Top of oil saturation was called at 5270 feet. Small amount of free oil appeared after using 1000 gallons of acid, and when reacidized with 3000 gallons the hole filled 4400 feet with sulphur water. The test may be plugged back then shot with nitro. It is a north offset to a flowing producer that was drilled to 5372 feet, or 1965 feet subsea.

Two wildcats situated to the north and northeast of established production in the upper basin region were eliminated the past week. In Lynn County, H. F. Wilcox Oil & Gas Company's Powell 1, NW SW SW EL Section 134, Block 12, quit at 5181 feet, having logged top of solid lime at 4170 feet, with an elevation of 3280 feet. Hockley County's failure involved Denver Producing & Refining Company and Helmerich & Payne, Inc.'s Whiteface Farms 1, Labor 22, League 77, Reeves County School Lands, which found water at 4768 feet. Drilling was underway at 4790 feet to establish the main water table.

A natural flow of 51 barrels of 26½-gravity oil and 6,100,000 feet of gas daily was developed by Magnolia Petroleum Company's Sealy 3-43, center of east half Section 43, Block F, Ward County, from a single-shot perforation in casing at 2924 feet. It is the company's second producer on a reef type of structure uncovered late last year, and is 1685 feet southwest of the discovery which is classed as a gasser. The new producer cemented 7-inch pipe on bottom after testing water at 2938 feet. Single perforations at 2926 and 2925 feet failed to yield production. The company is to announce another location that will be spotted down-dip on the structure as a means of avoiding the high gas/oil ratio condition.

Gulf Oil Corporation's Wristen 5, first projected Ordovician test for Ward County, has progressed to 5145 feet, using core barrel at intervals to record formation changes. In northern Pecos County, Humble Oil & Refining Company's Young 1 was drilling shale and lime at 5495 feet and is credited with being in the Detrital zone, topped at 5185 feet.

Ellenberger production at Carlisle is indicated

Abilene, Texas.—The first oil production from the Ellenberger limestone on the east platform of the Permian Basin is indicated for the Carlisle pool, Stonewall County. W. I. Southern, Inc.'s Carlisle 2, CE½ NW SW H&TC Section 293, Block D, filled 1500 feet with 41.6-gravity oil in 5 hours from 3-foot saturated lime section, topped at 6540 feet with an elevation of 1790 feet. No appreciable increase in saturation was reported in drilling to 6575 feet. Small show of water is believed to be drilling fluid. Since the Ellenberger usually responds favorably to acid treatment, Carlisle 2 may be converted into a commercial producer. It is 1800 feet northwest of the pool discovery, which gave the county its first strike in making a pumper from the Palo Pinto lime at 5172-76½ feet in August, 1938.

Shell Oil Company's Smith 1, NWc SW H&TC Section 143, Block 1, only active wildcat in Stonewall County, was drilling at 5360 feet with the Ellenberger as its objective. Top of Palo Pinto

was called at 4700 feet, and first Strawn at 5151 feet with an elevation of 1767 feet.

Jones County's Palo Pinto lime prospect by Sam Roberts et al's Jeffreys 1-A, NW SE NE T&P Section 7, Block 15, proved dry when saturation at 3478-3489 feet was tested through casing. Oil and gas showings through drilling fluid were considered ample to make a producer.

Montour Production Company's Taggert-Tide Water 1, C NE SW H&TC Section 184, Block 2, first deep test for the Rotan pool, Fisher County, is awaiting orders at 5586 feet. It is ¾ mile northeast of the 3500-foot oil area, and is credited with having reached the Ellenberger.

Tal-Vez Oil Company's Richards 1, SE Block 10, Guadalupe County School Lands No. 120, Taylor County semi-wildcat and on the west edge of View, earned a potential rating of 310 barrels for an allowable of 50 barrels daily after acidizing broken pay at 2329-95 feet. It is ¾ mile east of gas production developed by the company.

Request 20-barrel allowable for Hoffman field

Operators in the Hoffman field, Duval County, requested an allowable of 20 barrels daily for the 305 wells in the field at a hearing before the Texas Railroad Commission last week. Although these wells were permitted to produce 20 barrels in January, an amount being produced currently in similar fields in this area, they were reduced to 13 barrels for February.

Testimony was presented to show that the oil could be produced without waste and that there was a demand for the additional production.

R. F. Schoolfield, of the Duval Oil Corporation, asked that the commission enter an order permitting him to witness potential tests now being taken on leases owned by Cox & Hamon which offset his. At the January statewide hearing, Schoolfield charged that there were dead wells on the Cox & Hamon tracts which were given allowables on the proration schedule. The commission is now testing the wells at the request of Cox & Hamon, but the company has refused to permit Schoolfield on its lease.

Schoolfield said his company owned offset tracts which they expected to drill and that he was entitled to the information he sought about the wells. Although he was promised the results of the test, he insisted that he be given the right to witness them. Dr. F. V. L. Patten, director of production for the commission, before whom the hearing was held, told Schoolfield he thought commission engineers were competent to make the tests and indicated that he would not recommend to the commission the order which Schoolfield requested.

Order new tests for Seminole

The Texas Railroad Commission has entered an order providing new potential tests for all wells in the Seminole field, Gaines County, which were completed prior to January 30, 1940. New field rules were entered on that date. Retests have been ordered so that all wells will be governed by the same rule.

North Texas

Third Bend strike in Montague County in as many months

Wichita Falls, Texas.—Another prolific oil strike from the Bend lime horizon in Montague County, making 3 lower Pennsylvanian discoveries for the county in as many months, is indicated by preliminary test given a wildcat in the northwest portion of the county. A new producing depth record for North Texas is also involved in the pending completion of W. Bland Omohundro et al's Wilmer D. Seay 1, 3½ miles south of Ringgold, which has cemented pipe after flowing steady through drill stem when tester was used at 5675-5704 feet. Top of Bend was called at 5654 feet, or 4724 feet sub sea, and saturation was topped at 5693 feet. Seay 1 is located 330 feet from west and 1953 feet from north lines of H&TC Section 32, Block 4, being 3 miles northeast of 3400- and 3900-foot Strawn production in the Worsham pool, eastern Clay County.

As a wildcat prospect, Omohundro et al's test was generally classed as a run-of-the-mill type without any unusual geology and geophysical data to support. The block was assembled last fall by A. L. Andree, M. T. McLaughlin and others, who sold a spread to Stanolind Oil & Gas Company at $12.50 per acre. Other lease sales were assured when Omohundro, Wichita Falls producer and drilling contractor, contracted to drill the test for acreage and cash. No encouragement for production was developed from the Canyon, or Strawn series, and the finding of oil in the Bend provided a major surprise. The Jolly 5400-foot Bend lime pool, western Clay County, is currently the deepest producing level in the district.

A west extension to the Nocona pool's Bend lime horizon became assured when Stanolind Oil & Gas Company's McCool 1, NEc of 80-acre lease, flowed oil and gas when formation tester was used on saturated section at 5236-55 feet. Operations were halted to cement 7-inch at 5230 feet. Top of Bend was listed at 5176 feet. It is due to be the fourth producer in the deep zone for the pool. Youngblood & Foree's Hillcrest 1, nearest test to the Nocona townsite, was a failure in the Bend, but succeeded in making a well from the Lower Strawn in plugging back from 5405 feet to 4677 feet.

A west offset to the Bend lime discovery at Bonita, eastern Montague County, was due to spud late last week. Sinclair Prairie Oil Company observed 840-foot interval between locations in spotting David Doty 1, located on 69.08-acre tract, J. H. Jones Survey. A. P. Howard 1, the discovery, gauged 264.06 barrels oil through open tubing on 3-hour official gauge from lime at 5239-49 feet. Sinclair Refining Company began welding work on a 7-mile 6-inch pipe line connection early last week, providing ample capacity for a prolonged development campaign projected by the discovery company.

Western Montague Failure

The Bend horizon was eliminated as an oil source for Walter H. Gant and Continental Oil Company's Brown 1, western Montague County wildcat and 5½ miles northeast of Bowie, in plugging back from Ellenberger at 7288-7341 feet to test by stages after perforating pipe. The Bend, topped at 6112 feet, tested salt water, and shallower test at 6070-80 feet also carried water. The Strawn still offers fair chances for production.

The Shell-Henderson pool, southwestern Clay County, was due to have a second test on the sand late last week. In the meantime Shell Oil Company's Henderson 1, which pumped 338 barrels of oil and a little water initial from Middle Strawn saturation at 3545 feet, has been given an outlet through the laying of a 2½-mile 2-inch unit by Sinclair Refining Company. The most favorable saturation and porosity found at 3419-32 feet by this discovery remains cased off. L. T. Burns et al's Mullens 1, SE SE NE Section 2617, a northwest outpost, was drilling at 3400 feet, and is due to try for completion in the upper zone.

An apparent failure for northeastern Archer County and on a strike between the Hull-Silk and Asylum areas was credited to C. B. Christie and Phillips Petroleum Company's Taylor 1, H. Cox Survey, which halted at 5281 feet, having entered the Bend lime at 5215 feet with no shows. A record well for the Hull-Silk Lower Strawn pay is credited to Deep Oil Development Company and R. G. Drilling Company's Little 5, which flowed out of control after drilling pay at 4300-17 feet. It later flowed 60 barrels hourly through small valve opening.

Production test was underway late last week on a prospective Bend lime producer adjacent to the Hull-Silk field, Archer County. Continental Oil Company's Wilson-McCrory 1-A-20, NE SW H&TC Section 20, situated east of the north portion of the prolific Strawn area, used machine to drill plugs from 7-inch pipe at 5138 feet, with the hole bottomed at 5250 feet. It is credited with having entered the Bend at 5144 feet, and logged saturation in 2 comparatively thin sections between shale breaks. The best prospects for oil production is in Lower Strawn saturation, topped at 4698 feet. The latter is about level with the oil zone in the nearby McCrory one-well pool.

K-M-A, Hull-Silk Outlet Increase

Relief for the unconnected wells in the K-M-A and Hull-Silk fields will begin materializing late this month through the completion of Sinclair Refining Company's extra 8-inch carrier, paralleling a 6-inch line to Hensley Junction, Jack County. More than 40 miles of the 66-mile project are complete, and a 28.7-mile section, extending from Predo station, southeastern Archer County, to Hensley began handling oil March 1 to help relieve the congestion. The company expects to be able to put the new line in service about March 20. In the meantime, the 43,630-barrel daily allowable given K-M-A this month is greater than actual pipe line outlet, and operators are piling up back allowable at a disturbing rate. Numerous leases underproduced

during February because of inadequate transportation and market, and this shortage is permanently forfeited. Operators are relying upon Sinclair Refining Company to make heavy runs during the last week in March to avoid forfeiting a greater volume of allowable for the calendar month. Other pipe line companies that serve the 2 fields are over-connected under the March schedule of production.

Seek Deeper Mankins Pay

A deeper producing zone is being sought for the Mankins deep area, Archer County, by British-American Oil Producing Company's T. B. Wilson 1-C, near C N½ SE NW H&TC Section 12, Block 3, south of its discovery, after passing up broken saturation, aggregating 15 feet, in the Bend pay at 4832-87 feet. Coring was resumed after recovering chert and lime at 5265 feet. Roeser & Pendleton, Inc.'s Parkey 1, C NW SW H&TC Section 11, was drilling at 3930 feet. Hedrick Oil Co. et al's Wilson-McCrory 1, SWc Lot 2, Section 94, 2½ miles south by east of the Mankins pool, was drilling at 2600 feet on a 4700-foot contract. Deep Rock Oil Corporation's McCarty 1, NWc Section 21, Charles Brown Survey, 5 miles northeast of Megargel, was drilling at 2350 feet on a 5500-foot obligation.

The search for deep production on the west side of the North Texas producing belt has not been as aggressive as in the counties to the east. However, a popular geophysical prospect in Wilbarger County is to be tested with the starting of operations on Amerada Petroleum Corporation's B. Goodpasture 1, C SW SW H&TC Section 35, Block 15, 2 miles northwest of Fargo. Lease bonuses climbed to $100 per acre cash last fall when it became known that a contract had been assumed to drill to 8000 feet, or a decisive depth in the Ellenberger.

Propose pressure maintenance for Leo pay, Lance Creek field

A crew of engineers under the direction of V. C. Hendrickson, Denver, last week was completing a survey of the Lance Creek field to determine practicability of a gas pressure-maintenance system for the Leo horizon, deep producing zone of the field.

A report will be made April 1 at a meeting of the Lance Creek Unit operators, and several independents not in the Sundance Unit but who aided in financing the investigation of the Leo horizon and who are expected to join in the unit development of the Leo sand.

A gas pressure-maintenance project has worked successfully in the Sundance zone, where production is taken under voluntary proration at optimum rates. There has been decrease in production, or water intrusion from edge wells. Both in the Sundance and Leo areas, operators have spaced wells at 1 to 40 acres. The Lance Creek field has been a model of voluntary cooperation in good production practice with little or no offset drilling, and equitable taking of production both within and without the Sundance participating area. Three major companies and several independents are in the field.

East Texas

Camp County offers prospect of Lower Trinity production

Tyler.—Camp County entered a firm bid early last week to contribute the next Lower Trinity discovery in Northeast Texas when an isolated wildcat logged three possible producing zones in drilling to 8086 feet. Confident of a producer based upon core analysis and an electrical log survey, Harry S. Moss, William C. McGlothlin and Delta Drilling Company prepared to run a string of casing before attempting a test of their Joe Venters 1, which was drilled with open hole below surface pipe at 113 feet. The prospect is located 1320 feet south and 330 feet west of the northeast corner of the east 45 acres of the S. Wright Survey, being 2½ miles southeast of Leesburg and 6 miles southwest of Pittsburg. It is 22 miles north of the Gladewater producing section of the East Texas field and is the first try for deep production in the comparatively small county.

An electrical formation survey placed the probable oil or gas distillate zones at 7948-78 feet, 8003-8009 feet, and 8015-35 feet, with possibilities of water being present at 8039-43 feet. Casing will be landed on bottom to be perforated by stages. Belief prevails that the saturated zones are in the Basal Glen Rose geological province although the reddish sandstone nature of the formation samples resemble the Travis Peak. The Massive Anhydrite was logged at 7116-7375 feet with an elevation of 385 feet (corrected). The Hill sand which produces at Rodessa was listed at 7395-7412 feet and 7451-60 feet but samples did not warrant testing.

The deep prospect originally was completed by McGlothlin et al as a failure in the Paluxy at 5710 feet. Moss et al completed two Woodbine failures in the general area in 1939. Subsurface information gained from the three tests and supporting geophysical data provided the basis for the deepening of the old hole. Prices on leases and royalties soared immediately after the recovery of the first oil saturated core.

Camp County is crossed by Humble Pipe Line Company's 8-inch carrier which handles low-gravity oil from the Talco field while Gulf Refining Company's Mid-Continent-Port Arthur multiple system is a short distance west of the county.

Sun Oil Company's Huddle 1, south outpost for the Chapel Hill pool, eastern Smith County, entered the Travis Peak zone at 8119 feet, thereby maintaining its structural position higher than the discovery oil well. The former was coring at 8140 feet in sandstone which carried oil stain and odor. Drilling is due to be halted shortly to run pipe for a production test. The last formation tester was used with negative results at 7938-8019 feet in Pettit topped at 7983 feet. Temperature reading during this operation recorded 176 degrees at 8019 feet.

A blank liner has been set by Shell Oil Company's Dorsey 1, Percilla area, Houston County, to proceed with production tests by perforating and plugging back by stages from 10,893 feet. The Pettit zone topped at 10,658 feet by electrical log will be tested first although samples did not indicate production.

Murray Samuell and Zephys Oil Company's Barron 2, second deep gas-distillate producer for the Barron pool, Limestone County, has been connected with Lone Star Gas Company's system in accordance with the latter's exclusive gas-purchase contract. This new completion is rated at 2,500,000 feet daily from the Pettit at 5719 feet after perforating casing. The dark color of the distillate enhances the prospect of the well converting into an oil producer.

East Texas gas recycling to double during 1940

Gladewater, Texas.—Gas recycling operations, a business which made its debut in East Texas less than three years ago, is to have its most outstanding growth in 1940, early March indications showed, with the six such plants now in operation, including one started in December, 1939, to be augmented by at least five more units in District 6, Oil and Gas Division, of the Railroad Commission of Texas. Recycling units now in operation range from $100,000 to near $500,000 in valuation, and though operators are reticent at the present stages of their plans to give cost figures on the new projects to be installed, gas production potentialities are sufficient to justify the larger capacity plants in at least three of the new locations.

Plants which during February were recycling gas, taking it from the Woodbine, separating out the distillate, and returning it to the same Woodbine formation from which it was taken, included Tide Water Associated Oil Company's unit at Cayuga; plants of Trinity Gas Corporation, Tide Water Associated Oil Company and Anco Gas Corporation, all located in the Long Lake field; Portex Oil Company's plant in the Joaquin field, and American-Liberty Oil Company's plant in the Grapeland field.

Projected new recycling gas plants contemplate producing their distillate-laden gas from the same Woodbine formation from which the present operations secure their raw product, the Woodbine, in which all present operations find their intake volume best within a narrow range around the 6000-foot level. Operating gas pressures on the recycling plants have been reported variously at from 12,500 to 25,000 pounds back pressure, depending upon the well, with the Joaquin pressure generally a bit higher than in the other producing fields.

Largest of the recycling plants now in operation in East Texas is the Tide Water Associated Oil Company's plant at Long Lake, which has a capacity of 60,000,000 cubic feet of gas daily.

H. L. Hunt has filed an application for a gas recycling plant in the Long

Lake field. Grapeland Oil Company has completed engineering surveys and blueprints for constructing a recycling plant in the Grapeland field. Lone Star Gas Company has Railroad Commission permits for a fourth gas well and has completed three gas wells at Grapeland for production to supply a recycling plant it proposes to erect right away. Roeser & Pendleton plan to erect a recycling plant in the Cayuga field, making two there. Tide Water Associated Oil Company is reported ready to start building its second plant in the Long Lake field, making a total of four plants in that field.

Comparative operation reports on the six gas recycling plants in East Texas as compiled by the Texas Railroad Commission's Kilgore office for December, 1939, and January, 1940, most recent months on which data has been compiled are as folows:

	Dec. 1939	Jan. 1940
No. gas intake wells	17	19
No. injection wells	11	11
Intake gas volume, M.C.F.	*120,319	143,056
Disposition of Gas, M.C.F.		
Extraction loss	* 3,055	3,721
Plant use	* 5,640	5,721
Drilling	* 0	348
Pipe Line	* 1,548	2,474
Repressured (into ground)	*109,790	130,520
Vented vapors (burned)	* 286	272
Production		
Daily average gallons distillate	96,000	130,658
Average gallons recovered per thousand cu. ft. gas	0.798	0.913

*Thousands.

This comparison shows that during January two additional gas intake wells were added and that the resultant dry gas was re-injected into the ground without necessity of adding more injection wells.

Also significant during January was an increase of 0.115 gallons per thousand cubic feet of gas in the distillate recovery shown on the composite report for all six plants.

Texas permits

Permits for drilling 344 wells in Texas were approved last week by the Texas Railroad Commission, an increase of 14 over the previous week.

Four permits were approved in the East Texas field, including 3 in Gregg and 1 in Rusk County. From the remaining portion of the East Central Texas area 9 locations were reported.

North Texas led the state with 97 permits, including 27 in Archer, 20 in Wichita, 12 in Cooke, and 11 each in Clay and Young counties. The West Texas district held second place with 84 locations, including 28 in Ector County and 23 in Yoakum County. The commission approved 73 locations in Southwest Texas, with 11 in Jim Wells and 10 in Duval County. Operators in the Gulf Coast area were allowed to drill 11 wells.

There were 37 permits reported from West Central Texas, while operators in the Panhandle listed 29 approved locations.

Emperor on 20-acre spacing

Twenty-acre proration units for the Emperor field, Winkler County, is provided in a new Texas Railroad Commission order. The allowable is to be distributed on acreage and potential, with 50 percent allocated on each factor. A maximum gas/oil ratio allowance of 3000/1 is provided.

Southwest Texas

Second sand at Wade City showing for oil production

Corpus Christi.—Wade City in Jim Wells County was being established as the prime new development area of South Texas Gulf Coast as an oil sand was established by Rodney Delange. The field was opened several months ago with a 4800-foot Vicksburg sand distillate producer. Subsequent operations indicated that production would be limited to distillate.

The newest test is DeLange's McNeill 3, 933 feet southeast of McNeill 2, which found the top of a sand at 4802 feet, correlating with the discovery pay. On drill-stem test at 4802-12 feet, it developed 450 pounds pressure in 4 minutes. A drill-stem test at 4812-17 feet then recovered 1290 feet of oil, no water and 117 pounds pressure in 15 minutes. A third test at 4817-30 feet recovered 1800 feet of oil and salt water under 60 pounds pressure. The well was cored ahead to the 4900-foot level which had been opened as an oil sand by DeLange in McNeill 2 (formerly 1-A) several days ago.

The Wade City structure is fairly large and this multiple crude sand may mean an intensive drilling campaign.

Reese & Dunn's attempt to open a Frio sand field 2 miles northwest of Alice failed to meet with success. Perez 1, La Trinidad Grant, perforated at 3350-60 feet, swabbed dry and was awaiting orders. It had been drilled to 5510 feet, then plugged back.

Flour Bluff area of Nueces County again was the center of exploration as two key wells were starting. Humble Oil & Refining Company's D. F. Duncan 1, Lot 2, Block 50 and a mile southwest of production, had derrick up for a 7500-foot test. It is cut off from the field by failures. On the northeast side of the field, and on the downthrown side of the controlling fault of the structure, the company is building turning basin and channel for a 10,000-foot test, State D-1, in Tract 30, Laguna Madre, in the bay.

A new producing level for the McCampbell field of San Patricio County is apparent in Baytex Oil Corporation's Peoples & Nichols 1, Lots 2 and 3, Block 208, which is flowing oil with a large volume of gas under pressures of 2600 pounds on tubing and 2800 pounds on casing. Bottomed at 7604 feet, the well is producing from perforations at 7454-61 feet.

Continental Oil Company's St. Charles 1, Blassman Survey, which opened the St. Charles pool in Aransas County, is dead after bridging over at 9335 feet. It had a blowout at this level several weeks ago and ran wild, making gas and distillate, part of the time burning. A new well, 500 feet away, is being drilled as a relief operation as well as to test formations.

After months of testing, The Coronado Corporation is reportedly preparing to abandon K. L. Welder 1, Hidalgo Grant, southeast of Seadrift in Calhoun County. The hole is bottomed at 10,002 feet, having shown gas through perforations at several higher levels. Some reports are that it will be completed as a gas well and another test drilled.

Kirby Sharp and Fred M. Wood's C. E. Hart 1, Burgess Survey, 1 mile north of Odem in San Patricio County, was still being tested in the 6900-foot sand. After perforations had been made at 6907-11 feet, it was swabbed, recovering mud and oil. After standing 10 hours, fluid level rose to 2200 feet and pressure amounted to 650 pounds on casing. Opened one hour, it flowed water and oil but pressure dropped to 450 pounds. A squeeze job followed and the same section was reperforated.

Colton & Colton's Buchholz 1, Hidalgo Grant, and 2 miles south of the Cologne field in Victoria County, was being tested through perforations in a sand at 2485-2500 feet. The well had been plugged back to 5400 feet to test these Miocene sands. Four sands were found between 2070 feet and 2500 feet.

South Texas Sparta-Wilcox campaign at critical stage

San Antonio.—The next several days will be the most critical period in the Sparta-Wilcox play along the South Texas Gulf Coast since its beginning. Several tests were on or near the Wilcox zone as the week ended, their outcome expected before the middle of the month.

Drilled as a tight well on formation information, Atlantic Refining Company's Conwell 1, on the Myersville prospect in southern DeWitt County, was at 8195 feet and coring. It has cored a series of sand streaks, but little definite information is available as to whether or not any consolidated sand bodies have been found. The first break in formations was found at 7832 feet, called the top of the Wilcox. It is likely that this was above the true Wilcox zone.

Anderson-Prichard Oil Corporation and Mills Bennett Production Corporation's D. E. Robinson 2, at West Tuleta in Bee County, was likely well into the Wilcox zone at 8050 feet where it was coring. It is 950 feet northeast of Robinson 1, which had stuck drill stem at 7921 feet when it attempted to blow out, apparently at the top of the Wilcox. The second well did not find this sand section.

Union Producing Company's Ray 58, at Pettus, also in Bee County, was coring near 8100 feet at or near the top of the Wilcox formation. It had a Carrizo sand at 7518 feet with oil and gas odor.

Bunte Brothers, Inc., and Jack Frazier's operation on the Yougeen prospect in southwestern Bee County, was making rapid progress, drilling below 8825 feet. It is Earnest 2, BCSL Survey No. 17, contracted to 9500 feet, or the Wilcox formation.

Edwin M. Jones topped the Carrizo zone at 7063 feet in George West Estate 1-A, two miles northwest of George West in Live Oak County. The well found a sand body carrying a sulphur

odor and was drilling below 7435 feet on its 8300-foot project.

Sinclair Prairie Oil Company's Callaghan 1, Section 585, in northeastern Webb County, was going ahead to the Wilcox formation. It was last reported below 4750 feet, but no details are available.

Two Kelsey extensions in completion process

Mission.—New extensions to the Kelsey pool of Starr County loomed as completions were underway in two operations. One may be opening a new sand lens for the pool, while the other indicates a materially expanded producing sector.

Royal Oil & Gas Company's E. Juarez 1, Santa Teresa Grant, and 6200 feet west and south of the above field in Starr County, plugged back from 5630 feet and was preparing to test. A drill-stem test at 5586-5601 feet recovered 2100 feet of salt water. Casing was set below 4800 feet, the intention to test the basal Frio section below 4671 feet. A sand with gas odor had been topped at this level.

Humble Oil & Refining Company's McGill 62, at the extreme southern end of the Kelsey field and cut off from that area by dry holes, cored the field level at 4734-41 feet with salt water, then went through a 3-foot shale break followed by 10 feet of sand to 4754 feet. Drill-stem test in the lower pay recovered 1800 feet of oil, 100 feet of oily mud, 40 feet of salt water and 81 pounds pressure in 44 minutes. It was being completed as the week closed.

Sun Oil Company's Rodriguez 1, 5 miles northwest of the Sun pool and in Starr County, was holding much interest, going ahead at 6500 feet. It found sand with gas odor at 6426-40 feet.

Guadalupe County test showing for field opener

San Antonio.—Guadalupe County has another new oil field in probability late this week as preparations were being made for a production test in Fred W. Nute et al's M. T. Howell (Christie) 1, 2½ miles southwest of Nash Creek field. The well had a broken section of Taylor lime at 2578-2639 feet, where gas and oil showed in the cores. Tubing had been run and the well was being swabbed. It was showing some oil, but may have to be acidized to make it produce commercially.

The well had encountered the top of a chalk section at 2471 feet, which was defined by some as being Austin chalk. If this is the case, it may have slipped into the head of the fault and drifted down the downthrown side carrying it through the Taylor section a second time. The high chalk, if this proves to be the Austin formation, would give the fault a displacement of about 450 feet, possibly enough to provide an Edwards limestone prospect. Should the well fail at its present level, it will be carried deeper in search of production in the lower limestone.

The Nash Creek fault has been a rather disappointing proposition, only one crevice well being completed. Several Edwards limestone wells along trend have proved failures. The new well may be the key to a revival.

Day field's discovery well has been given a potential test, pumping 21 barrels of 37-gravity crude per day after an acid treatment of 2000 gallons. The well topped Austin chalk at 2381 feet, was drilled to 2830 feet in the Edwards limestone then plugged back to 2586 feet at the base of the Buda limestone. The discovery is in the Hinds Survey, 2 miles southeast of Luling and in Guadalupe County.

Ralph R. Ogden's Fred Talley lease, farmed out from Sun Oil Company, has paid off with producer to indicate that the sector 1 mile east of the main Dale field will be prolific. Talley 3, Swearingen Survey, topped Dale limestone at 2101 feet, Austin chalk at 2246 feet, and was completed at 2286 feet, where it flowed 488 barrels of pipe line oil in 17 hours through 2-inch tubing. Casing pressure mounted to 430 pounds.

Sejita field has second test showing condensate in Yegua

Laredo.—Sejita field in Duval County had its Yegua sand possibilities further expanded as a second well for the field indicated a condensate producer at that level. Standard Oil Company of Texas' A. B. Rodriguez 1, ¾ mile north and slightly west of the discovery, made the test at 6790-6838 feet in a sandy section at the bottom of the hole. Although the gauge did not work properly, the well was known to have developed a heavy pressure and showed a good gas blow. A small amount of distillate was recovered.

Hole was plugged back to the casing seat at 5691 feet, where 7-inch had been landed. A series of tests will be made of sands in the Hockleyensis group between 5400 and 5637 feet. The discovery well had been completed as a condensate producer in a 5400-foot sand.

North Sweden field of this county received a set back with 2 deep failures. Henderson Coquat was awaiting orders at 6025 feet in Momeny Estate 1, Section 17, on the west side of the field. Southwood Oil Company's Rossi 8-A, Section 10, failed in the Pettus sand at 5378 feet and was plugged back to the 3800-foot sand, where it was finished as a gas producer.

Magnolia Petroleum Company has commenced a second Yegua sand well on the west side of the Government Wells field. It is C. W. Hahl 4, Section 41, an offset to the recently abandoned Hahl 3, which showed oil and gas in a new 3000-foot pay.

Zapata County again was in the center of attention as a possible source of new Queen City sand production. If productive, J. P. Martin's Serapio Vela 1 will open the second pool in this zone in the one county. The well, in Share 2, El Grullo Grant, and 7 miles south of the Comitas field, drilled plug to 3003 feet and was to be shot with nitro, possibly to be followed by an acid treatment. The hole had been carried to 3511 feet after a sidetracking job. Pipe was set at 2906 feet, giving the well 97 feet of open hole. The sand section was logged at 2897-2937 feet and at 2971-3167 feet, the top of the Queen City having been picked at 2640 feet. The formation was tight and carried a lime appearance.

Queen City sand is productive in the Roma area of Starr County, Lopeno field of Zapata County and in the Carolina-Texas and Bruni fields of Webb County.

Ask higher Foster field allowable

A higher allowable for wells in the Foster field, Ector County, was requested at a hearing before the Texas Railroad Commission last week. Broderick & Calvert, Amon Carter, York & Harper, and other operators in the field joined in the application.

They asked that January allowables be restored, permitting wells to produce 32.4 barrels daily. They get 24 barrels now, and there are 400 wells in the field. Evidence was presented to show the Humble Pipe Line Company has recently increased its facilities and will buy the additional oil.

Picket Ridge gas rule revised

The Texas Railroad Commission has entered an order suspending a rule for the Pickett Ridge field, Wharton County, which limits daily production of gas wells to the volume of gas taken from the field by oil wells.

Gas-well operators complained they could not operate on the lower rate of flow and charged their wells were being sacrificed to The Texas Company, which operates the oil wells in the field.

Ask higher allowable for Rincon field

W. R. Davis, Inc., has requested a higher allowable for wells in the Rincon field, Starr County. The company asked the Texas Railroad Commission for an allowable of 200 barrels daily for each of three wells producing from the 4200-foot sand, and 125 barrels daily for two wells producing from the 3800-foot sand. The wells are now allowed 35 barrels a day.

Ask 100-barrel allowable for West Ranch, Jackson County

Glasscock Brothers Oil Company has requested an allowable of 100 barrels daily for 74 wells in the West Ranch field, Jackson County. Magnolia Petroleum Company would buy the additional oil. The wells have an allowable of 43 barrels daily now.

Testimony at a Texas Railroad Commission hearing showed there are approximately 4000 proven acres in the field, and that 75 percent of this area is developed on 40-acre spacing. At higher rates of flow, gas/oil ratios decline. Five sands are producing from 5100 to 5800 feet. Porosity of the sands averages 27 percent, and permeability varies between 700 and 3000 milli d'arcys.

Name South Texas areas

Oil areas of Jackson County, Texas, known as Vanderbilt and West have been combined under the name West Ranch, according to J. M. Hancock, chairman of the oil field nomenclature committee of the South Texas Geological Society. The change conforms with current usage.

The area opened by A. J. Hollifield's D. M. Day 1, in the James Hinds Survey of Guadalupe County, has been named Day field.

Texas Gulf Coast

Several new sands showing favorably at Chocolate Bayou

Houston.—Glenn H. McCarthy has evidently discovered several new producing sands at Chocolate Bayou field, Brazoria County, with Andreau 1, ¼ mile southwest of the discovery, H. T. & B. No. 5 Survey. The test, down to 11,337 feet, ran electric log that showed possible oil sands at 11,112 feet, 11,155 feet, 11,265 feet, 11,275 feet and 11,295 feet. Side wall cores taken at 11,300 feet, 11,294 feet and 11,115 feet showed oil and gas. Any of these sands would provide a new producing horizon for the area and also the deepest producing sand in Texas. The well has had other shows up the hole around 10,000 to 10,300 feet. The discovery was completed around 9900 feet. McCarthy's Houston Farms Development Company 1 was drilling below 11,125 feet in shale.

About 4200 feet northeast of the discovery at Anchor, Brazoria County, Humble Oil & Refining Company was running casing in Galzink & Taylor 1 after drilling to 10,994 feet in shale. Several sands logged up the hole have shown gas and oil. A production test will be made. Glenn H. McCarthy's Galzink 1, J. De J. Valderas Survey, was down to 10,500 feet after running electric log. Sands at 9112 feet, 9308 feet, 9735 feet and 9760 feet indicated they might produce.

About 2 miles southwest of the discovery at Anchor, Glenn H. McCarthy's Neidringhaus 1, J. Bradley Survey, was coring in shale below 9950 feet. The outpost, being drilled tight, is believed to be running higher on structure than expected. His Salmon et al 1, George Robinson Survey, was still testing at 9824 feet. It came in flowing about 200 barrels of distillate daily through ¼-inch chokes.

Marthafield Extended South

Marthafield, Liberty County, was extended south when Stanolind Oil & Gas Company completed Ross 1 after perforating casing with 12 shots at 8092-96 feet. It flowed 39 barrels of oil in 12 hours through a ⅛-inch choke with tubing pressure of 600 pounds and casing pressure of 800 pounds.

East ½ mile of Anahuac field, Chambers County, Humble Oil & Refining Company's Garth 1 showed oil and salt water on a drill-stem test after coring sands at 7135-63 feet. The test was made at 7140-60 feet in 18 minutes through ¼-inch chokes. Recovery was 3000 feet of salt water, 21 thribbles of oil, 2 of oily mud and 2 of salt water. No surface pressure was shown, but bottom-hole pressure was 3080 pounds. Operators were preparing for another test

George Anderson was waiting on cement at Lawrence 1, 3 miles north of Cedar Point field, Chambers County, before making another test. Casing was perforated in the wildcat at 7130-40 feet and swabbed salt water. Perforations were squeezed, and then casing was perforated with 48 shots at 4265-90 feet. A drill stem test showed 10 feet of drilling mud, and then these perforations were squeezed.

East of production at Caplen, Galveston County, Sun Oil Company was waiting on cement at Zinn & Forman 3 after drilling to 7850 feet. The test logged sands with odors of oil and gas at 6205 feet, 6210 feet, 6214 feet, 6218 feet and 6222 feet. These sands are at a shallower depth than the field's regular producing sands, found around 7200 feet, 7350 feet and 7475 feet. South of production, Sun Oil Company's State 1-26 was down to 7660 feet in shale. A sand was logged by electric survey at 5948-97 feet. Seven-inch casing was set at 6186 feet. The outpost will probably test a new sand for the field.

Northeast of League City field, Galveston County, Continental Oil Company abandoned Lobit 1, in shale at 10,743 feet after running electric log, and announced location for another wildcat in the same district. Lobit 1 was drilled tight and very little information has been given out. Operators located Stewart Title Company 1, 1400 feet southeast of a dry hole in the Perry & Austin Survey, Abstract 19.

Liberty County Wildcat

Southeast of Cleveland and east of Hardin in Liberty County, Gulf Oil Corporation announced a wildcat location on the Tarkington prospect. Kirby Lumber Company 1 is 1400 feet from the north and east lines of Hugh Means Survey. The company worked the area with reflection seismograph in 1939 and early this year. Derrick is up.

Titantic Oil Company's Boyt 1, Double Gum Bayou area, Liberty County, is nearing the 8834-foot sand which caused the wildcat to blow out some time ago. The wildcat was drilling at 8415 feet in shale. When it blew out, it showed a little oil with a large amount of gas.

East of production at Bammel, Harris County, Earl C. Hankamer was completing Graves Estate 1 after drilling to 6560 feet. Hole was plugged back to 6280 feet and casing set. Perforated with 24 shots at 6248-57 feet, the well came in flowing an unestimated amount of gas and distillate. Tubing pressure was 2350 pounds. This is the operators first well for the field.

Another wildcat failure was reported in the Willis area. Schwab, Womack & Strum's Foster Estate 1, De La Garza Survey, Montgomery County, was abandoned at 8302 feet in the Wilcox. No oil shows were reported.

Humble Oil & Refining Company was setting plug in Miller 1, northwest of the discovery at Rosenberg, L. E. Cross Survey, Ft. Bend County. Miller 1 was tested at 8530 feet and came in making gas, distillate and mud through a ¼-inch choke. It finally died. Washed in, it kicked off making gas and distillate with tubing pressure of 400 pounds and casing pressure of 600 pounds. It flowed gas and salt water and then died again. Operators ran a bottom hole bomb to 7625 feet and found a bridge. Tubing was pulled and plug set.

South Louisiana

West Cote Blanche wildcat to make test of oil showing

Lake Charles.—The Texas Company probably will make a production test on State 1 at West Cote Blanche, 16s-7e, St. Mary Parish, the coming week. It may open a new oil field for the Louisiana Gulf Coast. Hole is bottomed at 8685 feet and an electric log was run. Sands at 3109-37 feet showed 35 percent porosity and 20 percent saturation, and sands at 3141-60 feet showed 36 percent porosity and 16 percent saturation. The wildcat also logged a sand at 7334-84 feet which had a slight show of oil. Casing probably will be set for a production test.

Plymouth Oil Company was preparing to test McHugh Heirs 1, Bayou Pigeon prospect, Section 13-12s-10e, Iberia Parish. The wildcat is bottomed at 10,021 feet and 7-inch casing was set at 8268 feet. McHugh Heirs 1 first logged oil sands at 7278 feet, where a drill-stem test showed 2 stands of 31-gravity oil, 5 stands of salt water and 8 stands of mud cut with oil. Broken oil sands were cored at 7511-20 feet and sand with streaks of shale showing oil was logged at 7900-52 feet. A drill-stem test at 7928-52 feet showed 34 barrels of 31-gravity oil. Hole was cored deeper and oil sands at 8045-70 feet showed 36 barrels of 35.6-gravity oil on a 10-minute drill-stem test. No sands were reported below 9000 feet. McHugh Heirs 1 is being drilled on acreage farmed out by Shell Oil Company. It is the operators' first try for production in the South Louisiana district.

Continental Oil Company's Niblett 1, Niblett Farms area, Jefferson Davis Parish, attracted considerable attention when it blew out at 11,619 feet. Several thousand sacks of special drilling mud was pumped into the hole to bring it under control. The wildcat showed a strong gas pressure and some reports state it showed a little oil. After the well is controlled, it will be cored deeper.

New Sand at Lafourche

Mikton Oil Company's Martinez 2, 1650 feet southeast of the discovery at Lafourche Crossing, Lafourche Parish, has evidently opened a new oil sand for the field. After drilling to 11,000 feet, operators plugged back and perforated casing at 10,015-025 feet and made a production test. The test flowed 100 barrels of 52-gravity distillate daily through ⅛-inch choke before freezing occurred. Shut in, the well will be opened after bottom-hole choke is installed.

The Texas Company will attempt to open a new sand at Port Barre, St. Landry Parish. Hole is bottomed at 6242 feet with 7-inch casing set at 6239 feet. The well had a show of oil at 6053-93 feet, odor of oil at 6004-09 feet, oil sand at 6087-6106 feet, oil odor at 6158-65 feet and another oil odor at 6169-74 feet. Any of the sands would provide the

deepest sand ever to produce at Port Barre.

Shell Oil Company has announced location for another wildcat on the St. Gabriel prospect in Iberville Parish. Southwood Riverside Plantation 1 is 2000 feet east along the south line of section from the southwest corner of Section 20-9s-2e, thence 115 feet north to location. The company has drilled two dry holes on this prospect, but both have shown oil and gas. The first wildcat made a production test below 9000 feet and recovered 124 barrels of 20-gravity oil.

Eola field, Avoyelles Parish, was extended northwest when Gulf Oil Corporation, Andrau and Tide Water Associated Oil Company completed Mouliere 1, Section 1-2s-2e. The outpost was perforated with 72 shots at 8512-30 feet and 52 shots at 8557-70 feet. It came in flowing 714 barrels of pipe line oil daily through ¼-inch choke with tubing pressure of 1400 pounds and casing pressure of 500 pounds.

Superior Oil Company opened a new oil sand at Grand Lake field, Cameron Parish, in State 7 at 8502-05 feet. Twenty feet of sand were logged and the top 3 feet perforated. The well came in flowing 273 barrels of 33.7-gravity oil daily through various size chokes with a tubing pressure of 2500 pounds.

Southeast 1½ miles of the discovery at Perkins, Calcasieu Parish, Housh & Thompson made location for Edgewood 1, 466 feet out of the SEc SW¼ NE¼ Section 33-8s-10w.

The California Company and Carter, Perrin & Brian have wells at Barataria, Jefferson Parish, which should be down to the 8200-foot producing horizon this week. The California Company's Zeringue Community 1 was drilling in shale below 7700 feet, while Carter, Perrin & Brian's Rutley-Wiseman 1 was coring in sandy shale at 7898 feet.

The California Company's Delta Minerals 1, Stella area, Plaquemimes Parish, was drilling in shale at 8900 feet and soon will run 9⅝-inch protection casing. No shows have been reported in this wildcat, and it is believed that operators will carry the hole to 12,000 feet or deeper.

The Texas Company has completed its first well at Grand Bay, Plaquemines Parish. State Lookout Pass 1 was drilled to 10,342 feet and casing set. It was perforated with 91 shots at 8725-70 feet and came in flowing 780 barrels of pipe-line oil daily through ⅛-inch choke.

North Louisiana

Zwolle half-mile extension test showing for production

Shreveport.—A ½-mile northeast extension of the old erratic Zwolle chalk oil field in Sabine Parish appeared likely last week in P. C. Alexander's Tilley 1, SW NE SE 30-8n-12w, which logged a good oil and gas show in the Zwolle chalk, topped at 2168 feet. The hole was drilled to 2230 feet and 7-inch casing cemented at 2170 feet. This part of the Zwolle field has been quiet for several months.

Gulf Refining Company is rigging for a 6000-foot wildcat test on a geophysical prospect in Madison Parish, northeast Louisiana, at Sondheimer 1, SE NW 33-18n-12e, just across the Mississippi River from Issaquena County, Mississippi.

Having reached contract depth, Harry Hanbury abandoned Holstun Unit 1, NE SW NE 29-18n-6w, geophysical wildcat prospect in Bienville Parish, drilled on a "farmout" from Standard Oil Company of Louisiana. Hole was abandoned at 7502 feet. With elevation of 277 feet this test logged top of Arkadelphia at 2114 feet; top of the red beds at 3748 feet; top of the anhydrite stringer at 4987 feet and top of the lime at 6940 feet.

H. L. Hunt was scheduled to drill plugs and test during the week-end at Louisiana Central Lumber Company 9, NE NE 13-10n-2e, LaSalle Parish wildcat that had a gas showing at 2900 feet and set casing. It is ½ mile west of Hunt and Arkansas Fuel Oil Company's Goodpine 1, NW NW 18-10n-3e, which is drilling below 8442 feet.

Tiki Exploration Company of which H. A. Stendrup of New York is president, has assembled a 5000-acre wildcat block around Section 13-22n-8w, Claiborne Parish, south of the shallow Haynesville field, that produces oil from the Blossom (Ozan) at 2800 feet, for a 5800-foot test to be drilled to the Glen Rose. A "shooting high" is claimed. In the last two years several companies have acquired acreage around the flanks of the Haynesville Dome—a tilted dome—for deep exploration.

Nothing of promise having shown in two core hole tests drilled by Atlantic Refining Company on a block of acreage it has in Township 9 north, Range 2 east, LaSalle Parish, further core-hole drilling will be abandoned.

Noyes B. Livingston has installed pumping unit at Bowman-Hicks Lumber Company 1, SE SW 36-9n-14w, on the southwest flank of the shallow Converse field, Sabine Parish, which showed oil after casing was perforated at 3134-3150 feet in a new horizon.

One and one half miles south of four gas-distillate producers in the Glen Rose at Joaquin, Shelby County, Texas, just over the line from Louisiana, Earl McDaniel and associates, on a farmout from Devonian Oil Company, were moving in materials for a Glen Rose test, Swan 1, Ann Gray Survey, on a 200-acre tract.

Recycling of gas from the lower Marine into the Pettet (basal Glen Rose) lime wells of the Lisbon field, Claiborne Parish, was begun last week. The only well drilled to the lower Marine in that field is Lisbon Exploration Company's Roberta Vaughan 1, NE NW 36-21n-5w, drilled to 8901 feet and completed as a gas-distillate well, making 4,000,000 cubic feet of gas daily and 68 barrels of distillate daily.

Using this as a key well, a recycling unit of six wells has been installed. The oil wells from the Pettet at Lisbon have been noted for their low bottom-hole pressure and many of them showed

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precipitate decline in yield soon after completion.

If the first unit is successful, other Lower Marine wells for repressuring will be drilled.

Arkansas

Magnolia has ceremonious celebration of 2d anniversary

El Dorado.—The Magnolia field, Columbia County, celebrated its second birthday last week by adding two Smackover lime oil producers to bring to 97 the total of wells in that field. The field was at first known as the Kerr-Lynn, from the name of the discovering operators who completed the discovery well in 1938. The occasion of the field's second birthday was marked with ceremonies, at which Governor Carl Bailey of Arkansas; O. C. Bailey, chairman of the Arkansas Oil and Gas Commission; and Harold Fell, vice president of the Independent Petroleum Association of America, were featured speakers. Miss Ferol Dumas was "queen" of the celebration which also paid tribute to the recent completion of a $775,000 gasoline absorption plant in the Magnolia field erected by Shell Oil Company.

A second producer for the one-mile east extension of the Atlanta field, Columbia County, appeared assured last week when Joe K. Mahoney's Emma Riley 2, C NE NE 14-18-19, offsetting to the east his Emma Riley 1, the extension well, logged porous Smackover lime with saturation and set final casing. Total depth is 8220 feet. The present test checked 8 feet higher than Emma Riley 1 so it was decided to complete it at present depth and not drill to 9200 feet as at first planned.

H. L. Hunt's McWilliams 2, NE NE 16-18-19, north edge test in this field, which refused to flow after acidization and extensive testing, was deepened 18 inches and is being washed with oil preparatory to another test. Total depth is 8252 feet.

British-American Oil Company made location for a Smackover lime geophysical wildcat prospect test and is rigging at Freeman-Smith Lumber Company 1, NE NE 17-15-13, Calhoun County. This is on a farmout from Amerada Petroleum Corporation.

Standard Oil Company of Louisiana Friday prepared to run formation tester in Sturgis 1, NW SE 1-17-27, Miller County, geophysical wildcat prospect planned for a Smackover lime test after an oil showing was logged in the Blossom (Ozan) in a core from 2923-31 feet. Of 7 feet of core recovered ½ foot was saturated oil sand and the rest sand and shale showing oil. Elevation is 346 feet. Top of Blossom was 2900 feet.

Arkansas permits

Two drilling permits were issued last week by the Arkansas Oil & Gas Commission, as follows: Clark County—J. H. Coker & J. P. Grieves' McClelland 1, 330 feet south and east NWc NW NW SE 11-10s-21w; Union County—McCreslenn Oil Company's J. C. Parker 3, 250 feet north and 430 feet east NWc NW SE 3-18-13.

Mississippi

Three wildcats projected to go to 5000 feet or deeper

Jackson.—Three wildcat locations, each of which will go to at least 5000 feet, were announced last week in Mississippi as its only oil field, Tinsley Dome in Yazoo County, accounted for its twenty-fifth oil well and the lines of production in that area were apparently further defined.

In Clarke County, east central Mississippi, on a block of 15,000 acres assembled by the late Joe Modisette and explored by geophysics, Arkansas-Mississippi Oil Company will drill State 1, C SE NE 16-2n-16e, with test to spud by March 15 and a 10-inch hole to be taken to at least 5000 feet. It was in this area in 1931 that Gulf Refining Company drilled a test to the Eutaw (Blossom) that showed for a 5-barrel oil well.

In Madison County, Ralph A. Johnston will drill a wildcat, Ray & Dinkins 1, SW SW 14-10n-3e, to at least 5000 feet, spudding date as required being April 19. In Yazoo County, Kingwood Oil Company on a block of 5000 acres will drill Wilburn 1, NE NE 31-12n-3e. Murray & Griffey who have drilling contract are rigging. Exchange Oil Company recently acquired one half of this block.

North of production at Tinsley Dome, Yazoo County, Hill & Hill and W. L. Stewart's Kinkead Plantation 1, located 1796 feet north and west of SEc NE 31-11n-3w, drilled ahead after topping Selma chalk low as compared to Tinsley Dome at 5127 feet. A core from 5196-5214 feet was salty in taste without odor or color of oil.

Southeast of Tinsley Dome production, Whigate Oil Company's Robertson 1, NW NW 20-10n-2w, was shut down at 5012 feet in Woodruff sand topped at 4988 feet. The top 8 feet was oil sand and the rest of the sand logged was salt water. Elevation is 259 feet.

Tinsley Dome's twenty-fifth oil well Edgar Johnston's Brumfield 2, SE SW SE 2-10n-3w, in the north offshoot of the field, was completed at 4774 feet, flowing 55 barrels per hour on initial gauge. With elevation of 143 feet this test logged top of chalk at 4597 feet and in a core from 4754 to 4774 feet, 6 feet of oil sand was logged being topped at 4766 feet. Union Producing Company has three wells in the field at the testing stage. One of them, Jennie Stevens 13, C NE NW 12-10n-3w, on a drill-stem test from 4831-4916 feet with ⅜-inch chokes at top and bottom and open 10 minutes showed 1300 feet of oil and 95 feet of salt water with 10½ pounds pressure. Seven-inch casing was cemented at 4505 feet, using 300 sacks of cement.

Magnolia Royalty & Leasing Company has contracted with Lockhart Drilling Company to deepen its recent-

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ly abandoned Brooks 1, SE NE 17-10n-2w, to 6500 feet.

Barnsdall Oil Company has leased a wildcat block in township 3 north, range 12 east, Jasper County and Hill & Hill have secured a block for an early test on a geophysical high in southeast Wayne County. Sinclair Prairie Oil Company is expected to exercise a geophysical option immediately for an early drilling test on a block in township 15 north, range 2 east, Holmes County. The same company recently took geophysical options on two blocks east of this block and in the same county owned by Hammett & Watson. Gulf Refining Company is leasing in townships 13 and 14 north, ranges 2 and 3 east, Holmes County, and Arkansas Fuel Oil Company is leasing in the north half of township 14 north, range 2 east. Five geophysical units including those of Gulf Refining Company, Stanolind Oil & Gas Company, Kingwood Oil Company, and Standard Oil Company of California are working in Attala County. Carter Oil Company has a seismograph unit in southeast Simpson County and also has a unit detailing in townships 12 and 13 north, range 3 east, Holmes County.

Rocky Mountain Fields

Lance Creek extended north; two extension tests drilling

Casper, Wyo. — Extension development on 3 sides of the Lance Creek field, Niobrara County, eastern Wyoming, held the spotlight in Rocky Mountain drilling activity last week.

An excellent producer on an outside north location was brought in and a new start on the extreme eastern end of the structure, ¼ mile east of the present outpost Sundance-sand producer, was spotted. A test ½ mile beyond production on the northwest side of the field was nearing critical depth.

Located ¼ mile north of production, although well up-structure on the subsurface contours of the field, Argo Oil Corporation's Ford 8, CSE NE NW 33-36n-65w, drilled in to rank among leading wells of the field with an initial rating of 70 barrels an hour on a 24-hour test. Production is from the second Minnelusa sand at 5416 feet.

Ohio Oil Company announced location for State-Lamb 7, NWc NW NW 36-36n-65w, a northeast offset to Continental Oil Company's recently completed Rodeo 3 on OPC-4. The latter test extended the Sundance producing area nearly ½ mile east from former limits. Ohio Oil Company is also putting down the northwest extension test. Agnes Rohlff 6, SE NW NE 32-36n-65w, has hole down 5312 feet and was coring for the objective Minnelusa sands. The test encountered water in the Sundance formations, limiting the pool in this horizon on the northwest side.

Two miles north of production in the LaBarge field, Sublette County, western Wyoming, North LaBarge Oil Company was drilling below 1,710 feet in Government 1, SWc NE SE 8-27n-113w. An extension test, it was nearing the Wasatch (Eocene) productive horizon. Its successful completion would add several hundred acres to the potentially productive area of the field. Importance of the LaBarge field has been increased considerably by a pipe line outlet to the Salt Lake City marketing area via Utah Oil & Refining Company's trunk line from the Lance Creek field across the southern part of Wyoming.

Weather conditions that have been holding down activity in Montana fields during the past several weeks have moderated to a considerable extent, with the result that the spring drilling campaign is getting underway. A 10-inch snow blanket still balks transportation in the Kevin-Sunburst field, in the northern part of the state, holding to 3 the number of active drilling wells. Chinook winds, however, have broken the cold spell in this field and operators are expected to resume normal operations in the near future.

In the Cut Bank field, largest producing district in Montana, 6 wells have resumed drilling after shutdowns for cold weather and 5 new wells have been started within the past 2 weeks, bringing this field sharply out of its winter slump and again into classification as the most active area in the state. One of the most important wells drilling was Newell & Chandler's Anderson 1, CNE NW 1-36n-6w, on the "Blackfoot Nose," a structural high on the northwest side of the field. Two miles from production, it was drilling below 3000 feet, expecting the Sunburst objective within 100 feet.

A gas blowout from the base of the Colorado shale resulted in a fire that destroyed rig on British-American Oil Company's Tribal 12, CSE NW 34-35n-6w, on the central-west flank of Cut Bank. Flames made it impossible for operators to remove tools from the hole before the rig was destroyed. A new derrick has been erected over the hole and operators were fishing for equipment to resume from present bottom at 2885 feet. The Cut Bank sand, principal productive horizon of the field, is expected above 3000 feet.

Michigan

Ottawa County wildcat to pump over 150 barrels daily

Mt. Pleasant, Mich.—Southwestern Michigan's comparatively shallow Traverse lime formation continued to produce the major part of Michigan's oil news last week with the recent discovery in Holland Township, Ottawa County, expected to forerun a sizeable drilling play this spring.

The Ottawa-Holland wildcat, 2 miles east of the city of Holland, Crown Development Company's Reimold 1, SW NW NE 34-5n-15w, will pump from 150 to 250 barrels a day natural through 2-inch tubing. It appears to lack enough gas- or water-drive to establish flow production. The company has about 1400 acres in the area surrounding the discovery, but leasing and dealing was active as far out as two miles last week. Prices on bona fide deals were reported up to $20 an acre a mile from the discovery.

Sun Oil Company's Switzer 1, Section 26-19n-3w, Clare County, one of the closest-watched Basin wildcats of the year, drilled out the Dundee dry and will be junked at 3897 feet. Likewise, Freeman Oil Company's School 1, Section 36-22n-8w, Missaukee County, in the general North Basin area that is being played at the present, also drilled the objective Dundee dry at 4053 feet.

Of 30 permits issued for the week, 10 were for wildcat starts including 9 for the shallow Traverse and one for the Basin.

Leases on 18,000 acres of Michigan state land taken

Oil and gas leases were taken on 18,089 acres of Michigan state land out of 34,455 acres offered at auction by the Department of Conservation March 1. A total bonus of $8,070 was paid for the leases, or an average of 44½ cents per acre.

Sun Oil Company's bid of $5 per acre on 120 acres in Franklin Township, Clare County, was the record price. A 43-acre semi-proven lease in Redding Township (19n-6w), Clare County, brought only $105.

Possibility that some of the leases auctioned may have to be canceled did not appear to deter bidding. Several tracts, under a 1939 delinquent tax law, may be redeemed by former owners. Where this possibility had arisen, the state auctioned the leases on a "money back" basis.

California

Fresno County wildcat trying for Cretaceous production

Los Angeles.—A. T. Jergins' Cheney Ranch 1, Section 29-14-13, in the Mendota area, Fresno County, was preparing to run casing after drilling to 6980 feet. The wildcat will attempt to get Cretaceous production, thus far found in California only at Coalinga. It will probably have to drill another 1000 to 2000 feet before it has enough of the zone to justify a production test.

Western production limits of Dominguez field was indicated when Pongratz Petroleum Company's Grant 1, cored into the eighth Callendar zone at 7688 feet to find only a gray sand that showed water. Production possibilities of 38 feet of oil sand in the seventh Callendar zone, lying just on top of the water sand, were considered doubtful. The eighth zone is the deepest known producing zone in the field. The test, shut down, may be deepened.

Raise new Refugio allowable

An increase in the allowable for the New Refugio field, Refugio County, is provided in an order issued by the Texas Railroad Commission. The field was raised from 3707 to 4013 barrels daily, effective March 8.

UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia)—		
Oliphant Oil Co., Rowe 1, 16-17-20	600	7668
Placid Oil Co., Booth 2, 20-17-19..	360	7585
Miller County (Rodessa)—		
J. S. Rushing, Tr., Dovie Wood 1, 18-20-27	100	6135
Union County (El Dorado East field)—		
Bob Branch, J. M. Davis 1, 28-16-14	*	3533
Union County (Schuler)—		
Phillips Pet. Co., B. Brian 5, 13-18-18	300	7670

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County—		
General Petroleum, Jonah Jones 2 (Long Beach)	150	4979
Hooking & Andrews, Walker 2 (Long Beach)	70	4825
Columbia Oil, Crawford 19 (Montebello-West)	96	7656
The Texas Co., Wilcox 2 (Montebello-West)	650	7777
Union Pacific, UP (LB) 128, (Wilmington)	852	3950
Western Annex Oil, Shaffner Comm. (LB) 1, (Wilmington)	270	3460
Kern County—		
El Tejon O. & Ref., Douglas 2 (Edison Area)	150	4280
O. T. Deal, M&M 1 (McKittrick Area)	5	6664
General Petroleum, Farrand 1 (Greeley)	1900	11,567
Superior, Scofield 1 (Greeley)	1540	11,500
Dick & Dore, No. 18 (Kern River)	5	580
National Oil, No. 35 (Midway-Sunset)	31	1588
Superior, Roe 1 (Rio Bravo)	1640	11,385
Rudnick 1 (Rio Bravo)	1573	11,420
Tide Water Associated, Strand KCL E-26-7 (Strand)	600	8340
James F. Collins, Konda 1 (Richgrove Area)	*	1654
Fresno County—		
Bandini Petroleum, No. 51-30B (Coalinga Northeast)	2915	8294
Standard, No. 62-19B (Coalinga-Northeast)	3735	8330
Superior, Husong 3 (Coalinga-Northeast)	no est.	8210
Kings County—		
Standard, No. 61-17Q (Kettleman North Dome)	1325	8485
Ventura County—		
British-American Oil, Hartman 9 (Ventura Avenue)	604	8764
Shell, Taylor 112 (Ventura Avenue)	3277	7520
Orange County—		
H. H. Jenkins, No. 1 (Olive Area)	*	600

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure, Gill 3, ce½ n½ nw 19-2n-8e	32	3111
Clinton County—		
L. C. Thorpe, Merten 1, ne ne sw 28-2n-1w	*	1445
Algona Oil Co., Fortney 3, se c se 12-1n-1w	580	2910
L. Lilly et al, Williams 1	1467	2917
Egyptian Ref. Co., Besent 1, se ne ne se 13-1n-1w	360	2984
Volkman et al, Harrison 1, ne ne se 13-1n-1w	200	2909
Crawford County—		
Seger et al, Steward 1, ne ne ne 27-6n-11w	*	2398
Fayette County—		
Gulf, Whitehead 3, nw ne nw 6-5n-3e	29	1638
Whitehead 6, ne nw nw 6-5n-3e	109	1629
Texas Co., Griffith 7, sw se ne 25-6n-2e	168	1565
Ohio, Williams 6, ne sw nw 36-6n-2e	133	1612
Texas, Swarm 3, sw ne sw 30-6n-3e	140	1560
Carter, Durbin 15, ne sw se 5-7n-3e	348	1585
Durbin 16, nw se se 5-7n-3e	228	1570
Hobbs 17, ne ne ne 6-7n-3e	210	1550
Durbin 14, ne se ne 8-7n-3e	120	1545
Trares Bros., Seibert 1, nw c nw 10-7n-8e	*	1643
Lowrey, Barnes 1, ne se sw sw 31-7n-3e	175	1575
Carter, Gregg 1, nw ne sw 13-8n-3e	396	1486
Miller 2, se se ne 16-8n-3e	120	1591
Tipsword 2, se sw nw 22-8n-3e	216	1505
Weaber-Horn 1, nw ne nw 28-8n-3e	198	1525
Weaber-Horn 2, se ne nw 28-8n-3e	252	1514
Marion County—		
Gibson & Jennings, Phillips 4, sw se sw nw	453	1866
Big Four O&G., Schaffnit 1, sw nw nw nw	1560	2972
Magnolia Pet. Co., Young 83, sw ne se se 20-2n-23	1080	3432
Young 88, sw se se se 20-2n-2e	2960	3447
Shell, Salem State Bank 8-C, ne sw se 20-2n-2e	2014	3419
Young Hrs. 13, se nw se se 20-2n-2e	1234	3416
Young Hrs. 16, ne sw ne se 20-2n-2e	1464	3420
Young Hrs. 1, nw nw ne se 20-2n-2e	695	3421
Texas, Young 26, swc se ne 20-2n-2e	936	3415
Magnolia, Young 75, sw se sw sw 21-2n-2e	220	2300
Texas, Lee 21, ne sw nw sw 28-2n-2e	5600	3415
Lee 22, nwc sw 28-2n-2e	2596	3448
Magnolia, Young 21, 60 ft s of se nw ne 29-2n-2e	3144	3410
Young 23, 100 ft n of nw nw ne 29-2n-2e	3528	3412
Ohio, Young 19, nw se ne nw 29-2n-2e	4375	3432
Texas, Fossieck 12, se ne sw 29-2n-2e	6559	3423
Fossieck 14, sw se se nw 29-2n-2e	7070	3426
Maxwell 3, se sw sw 29-2n-2e	2764	3360
Friedrich 25, c w½ se ne 30-2n-2e	245	2090
Shell, Farthing 6, ne nw sw ne 32-2n-2e	5460	3400
Texas, Friesner 17, nw ne se nw 32-2n-2e	6258	3372
McCollum 22, ne sw nw ne 32-2n-2e	6440	3385
Wyman 20, se nw nw nw 32-2n-2e	9600	3360
Montgomery County—		
Henderson Bros., Ostermeier 1, c nw nw nw 30-10n-4w	12	642
Richland County—		
Pure, Storer 2, c sw ne ne 23-4n-9e	5	2610
Wachtel 4, ne sw ne sw 6-4n-10e	410	2920
Wachtel 5, c w½ sw sw 6-4n-10e	1054	2940
Wachtel 1, c w½ sw nw 7-4n-10e	872	2975
Kermicle 1, c w½ sw se 31-5n-10e	151	2905
Wabash County—		
Mabee Dr. Co., Bump 4, se nw nw 9-2s-13w	170	2446
White County—		
W. C. McBride, Johnson 1, se nw ne 25-6s-8e	1273	2538
Exchange-Ohio, Rudolph School Community 1, sw se se 11-6s-9e	200	2282
Exchange, Storms 5, ne sw ne 14-6s-9e	104	2277
Exchange, Storms 5, ne se nw 14-6s-9e	105	2265

Summary of Drilling Operations in the United States, Week Ended March 9, 1940

	WELLS COMPLETED							*PERMITS FOR NEW WELLS				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	5	4	.....	1	1,360	39	51	2	2	18	43	223
California	23	20	.....	3	21,388	249	201	25	25	209	194	1,136
Colorado	.....	.....	.....	.....	.....	2	5	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois*	57	54	.....	3	86,097	667	767	79	79	765	.....	893
Indiana	4	1	2	1	5	74	23	.....	.....	.....	.....	.....
Kansas	29	23	1	5	32,405	286	244	41	41	311	232	1,583
Kentucky	3	2	.....	1	108	47	139	.....	.....	.....	.....	.....
Louisiana	25	17	1	7	4,772	302	179	34	34	244	216	1,449
Michigan	18	9	.....	9	1,395	259	230	30	30	256	191	1,419
Mississippi	1	1	.....	.....	1,200	29	1	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	.....	4	23	.....	.....	.....	.....	.....
Montana	2	2	.....	.....	255	28	.....	.....	.....	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico*	12	11	.....	1	6,889	154	130	21	21	158	.....	293
New York	22†	20†	1	1	100	217†	95†	.....	.....	.....	.....	.....
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	23	6	12	5	180	187	169	.....	.....	.....	.....	.....
Oklahoma	21	14	.....	7	4,717	386	370	31	31	355	370	2,059
Pennsylvania	41†	37†	2	2	30	516†	238†	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas	189	135	7	47	77,799	2,026	2,007	344	344	2,280	2,017	10,269
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Virginia	10	2	7	1	7	135	105	.....	.....	84	.....	.....
Wyoming	1	.....	1	.....	.....	30	40	.....	.....	.....	.....	.....
Total this week	486	358	34	94	238,707	5,600	5,018	607	607	4,640	3,263	18,752
Total last week	514	378	29	107	217,531	5,114	4,557	507	.....	3,991	2,889	18,752
Total this year	5,600	4,059	356	1,185	2,153,270	.....	.....	.....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.
† Includes water-input wells.

United States Well Completions—*Continued*

Indiana

Daviess County—
Hartman, White 3, sw sw nw sw 22-2n-7w ..... * 378
Spencer County—
W. W. Damron, Wright 3, c sw sw 20-7s-6w ..... ¶4.94 918
Wright 4, cw½ sw 20-7s-6w.... ¶4.42 900
W. W. Damron et al., Howard 2, ne se se 35-7s-7w..... 5 1536

Kansas

Barton Conty—
Sinclair Prairie, Oser 2, nwc sw 17-16-11w 2027 3325
Sharon Drlg. Co., Luerman 1, c s½ ne se 18-16-13w 3000 3362
Gulf, Howard 1, c n½ ne sw 8-21-11w 2532 3313
Butler County—
Sinclair Prairie, Graham 7, c w½ ne se 4-26n-5e 144 2633
National Ref. Co., Langford 1, sec ne 23-27-5e ..... * 3170
Saco O&G Co., Marshall 1, c sw sw 9-27-6e 30 3153
Allison et al, Zink 1, sec ne 32-29-5e ..... * 3224
Cowley County—
Hawkeye Oil Co., Moon 5, ne sw se 16-32-5e 638 3104
Crown et al, Dunn 1, nwc se 19-34-6e ..... * 3140
Ellis County—
Dickey, Stein 3, c n½ sw se 7-11-17w 3000 3384
Carmichael "B" 1, c s½ nw ne 18-11-17w 3000 3367
Republic, Bemis "A" 3, sw nw sw 21-11-17w 2160 3516
Hall, Oswald "B" 2, c e½ sw se 11-12-16w 2131 3109
Ellsworth County—
Cities Service, Padlena 1, ne sec 26-14-10w 3 2838
Simpson, Kruse 1, c n½ ne nw 20-17-9w ..... * 3270
Greenwood County—
Sinclair Prairie, Browning 60, c sw 20-22-10e 25 2346
Landon, Johnson 10, c e½ ne 22-24-12e 20 1730
Kingman County—
Skelly, Ratcliff 9, c nw 30-27-10w.. ¶92 3982
McPherson County—
H & M Drlg. Co., Boals 1, c ne nw 24-19-2w 86 2975
Republic, McMillen 1, c s½ sw sw 7-20-5w 3000 3366
Bradley et al, Mattson 1, c s½ se sw 19-20-5w 630 3336
Continental, Bornholdt 2, c s½ se se 30-20-5w 1885 3381
Rice County—
Cities Service, Pulliam "C" 2, c w½ w½ se 33-19-9w..... * 3329
Eldorado Ref. Co., Gossman 5, csl se ne sw 5-21-7w 1891 3342
Russell County—
Hartman et al, Boxberger 2, c e½ ne ne 26-14-14w 1977 3016
Stanolind, Rosener 6, c n½ nw sw 9-15-13w 613 3325
Phillips et al, Pauline 1, nw sec nw 15-15-14w 766 3232
Stafford County—
Transwestern, Banker "A" 1, c e½ ne se 10-24-11w 718 3801
Stanolind, Martin 8, c w½ nw nw 14-24-11w 2129 3833

Kentucky

Daviess County—
Wanna Oil Co., L & N RR 2..... 100 1235
Cobb et al., Tinsley 6..... 8 948
Ohio County—
Thrasher & White, Robinson 1..... * 835

North Louisiana

Bossier Parish (Sligo)—
Union Prod. Co., Thigpen-Herold B-1, 19-17n-11w ..... † 5210
Bienville Parish (Wildcat)—
Harry Hanbury et al, Holstun Unit 1, 29-18n-6w ..... * 7502
Caddo Parish (Pine Island)—
Burnham Drlg. Co., Wilkinson 5, 33-22n-16w 30 2470
Roger Harris, Evans 1, 11-20n-16w 30 1525
E. A. Stiller et al, Stiles 1, 28-21n-16w 150 2333
H. J. Strief, Noel Est. 1, 12-20n-16w 75 1543
Texas Co., Atkins Fee 2, 7-20n-15w 130 1536
Noel B-20, 14-21n-15w..... 65 1667
La Salle Parish (Urania)—
Graham & Harter, Urania Lbr. Co. 4, 18-10n-2e 200 1519

South Louisiana

Bateman Lake—
Texas Co., Wax Bayou 4..... ¶35 11,007
Black Bayou—
Shell, Watkins 44..... * 5826
Charenton—
DeArman, Alleman 11..... * 2801
Kern 10 ..... 40 1169
Pan American, Robichaux 20..... * 675
Darrow—
Humble, Gumble 17..... * 8496
Eola—
Amerada, Monchu 1..... 576 8573
Gulf-Tide Water-Andrau, Moulters 1 ..... 714 8577
Sun, Townsend 3 ..... 639 8572
Golden Meadows—
Brookshire Oil Co., Malgom 1..... 294 2670
Martex, Rebstock 1-G..... 127 5226
Texas Co., Falgout 11..... 421 5175
Grand Bay—
Texas, State Lookout Pass 1..... 780 10,342
Grand Lake—
Superior, State 7..... 273 8505
New Iberia—
Wm. Helis, Schwing 7..... * 8850
Woodlawn—
Union Sulphur, Norton 2..... 228 8127

Michigan

Allegan County—
Lentz & Miller, Berens A2, sw se se 27-4n-14w 50 1564
Gould & Cross, Rigterink 1, ne se sw 34-4n-14w 70 1445
Socony-Vacuum, Loew 4, ne sw se 3-4n-13w 65 1634
Calhoun County—
Transwestern Oil Co., Bole 1, se se nw 13-3s-8w ..... * 1491
Clare County—
Sun, Switzer 1, c n nw ne 26-19n-3w * 3897
Pure, Kubat 2, nw nw se 27-19n-6w 50 3886
Wicklund Dev. Co., Fell 1, c n ne se 33-19n-6w 285 3908
Kent County—
C. J. Neal, Dotzert 1, ne ne se 33-5n-10w ..... * 2047
C. J. Farley, O'Brien 2, ne se se 29-7n-12w 500 1905
Missaukee County—
Freeman Oil Co., School 1, s se sw 36-22n-8w ..... * 4053
Ogemaw County—
Weber Oil Co., Estey 3, nw ne sw 28-22n-2e 15 3715
Ottawa County—
Crown Dev. Co., Reimold 1, sw nw ne 34-5n-15w 245 1520
Basin Oil Co., Connell A1, ne sw se 24-7n-13w 115 1908
Van Buren County—
Brown et al, Kahl 1, sw se se 6-1s-14w ..... * 1265
Clapsaddle & Harris, Rogowski 1, ne se nw 23-1s-15w ..... * 1222
H. A. Marchant, Filbrandt 1, sw sw se 9-1s-16w ..... * 1070
Slee 1, nw se nw 17-1s-16w..... * 1060
Fortney Oil Co., Ingels 1, sw sw sw 1-3s-15w ..... * 1103

Mississippi

Yazoo County (Tinsley Dome)—
Edgar Johnston, Brumfield 2, 2-10n-3w 1200 4774

Montana

Glacier County (Cut Bank Field)—
Santa Rita O&G Co., Lander 4, cse sw 16-35n-6w 115 2990
Toole County (Kevin-Sunburst Field)—
Coolidge & Coolidge, McCurdy 2, ne nw nw 11-35n-3w 140 1600

New Mexico

Eddy County—
Continental, State 3-M-2, se nw se 2-18-29 ..... 912 2668
Continental & S. P. Yates, Brainard 1-3, sw nw se 3-18-29..... 437 2604
Bert Aston & Fair, State 1, nw sw ne 11-18s-29e 600 2653
Brainard & Guy, Guy 2, nwc sw 10-18s-29e 1200 2567
Dominion Oil Co., Johnson 3-X, near c ne sw 35-16-31..... 90 3893
Franklin Pet. Corp., Yates 5-A, nw sw sw 6-18s-30e 1200 2816
Eddy County (Wildcat)—
Mac T. Anderson et al, Root 1, c sw sw 12-17s-29e 100 2563
Lea County (Maljamar)—
Barney Cockburn et al, Baish 5-B, c nw se 27-17-32 ..... 504 4009
Lea County (Penrose)—
N. G. Penrose et al, Mattern 7, sw se sw 7-22-37 ..... 792 3635
Lem Peters & Elder, State-Humble 4-H, sw ne se 34-22-37..... * 700
Lea County (Vacuum)—
Humble, State 12-K, c nw se 32-17s-35e 664 4650
Magnolia, State-Bridges 53, c se ne 23-17-34 ..... 390 4609

New York

Allegany County—
L. W. Shaner et al., Parker farm, Bolivar 7 1415
Penn-York Oil Co., Welch farm, Bolivar 5 1452
J. A. Wilber, Northrup farm, Bolivar 5 1422
M. J. Crowley, Coast et al., farm, Bolivar 10 1296
Ebenezer Oil Co., Emerson farm, Scio 7 1045
Helen Randall, Reid farm, Alma... 15 1426
Bradley Prod. Corp., Monitor farm, Alma 5 1372
Otsquago Oil Corp., Pike farm, Alma 9 1445
L. & M. Oil Co., Maitland farm, Alma 4 1315
J. P. Herrick No. 2 Howe farm, Bolivar 9 1382
Quaker Oil Co., Brown farm, Alma 4 1236
L. H. Thornton et al., Brown farm, Alma 10 1373
Bliven Hill Oil Co., Norton-McEwen farm, Scio 5 882
Hill, Hughes & Keller, fee farm, Genesee 5 1342
Water Intake Wells—
R. B. Moore et al., Daggett farm, Bolivar 1274
Forest Oil Co., Ackerman farm, Bolivar 1409
N. V. V. Franchot, Reddy farm, Alma 1489
L. E. Norton, Coats farm, Scio..... .. 1215
Quaker Oil Co., Brown farm, Alma .. 1238
A. C. Shaner Oil Co., Childs farm, Clarksville 1256
Allegany County—
Cunningham Nat. G. Co., Beech Hill 1 ..... ¶6.95 4948
Empire Prod. Co., McLean 1..... * 4945

Ohio

Athens County—
Chaguell et al, Fee 6..... ¶.04 1454
Ohio Fuel Gas Co., Harley 1..... * 1543
Coshocton County—
Lupur Oil Co., Bryan 1..... 20 3148
Cuyahoga County—
L. F. McGrath, Buhl 1..... ¶.15 2644
Licking County—
Midland O&G Co., Bowser 7..... 25 3088
C. O. Moore et al, Van Fleet 1.... ¶.70 2647
A. Willey et al, Pound 1..... ¶.50 2570
Hoover Bros., Pound 1..... ¶.50 2628
Lorain County—
Wm. Dempsey, Hadaway 1..... * 2431
Medina County—
Edson & Sons Co., Brent 1..... 100 478
Medina Trust Co., Shaw A-4..... 5 359
Shaw A-8 ..... 5 342
Meigs County—
T. J. Chase, Lasher 1..... ¶ 640
Sumner O&G Co., Snowball 1..... * 2345
Morgan County—
J. V. Bowman et al, Hardesty 1.. * 1505
Muskingum County—
Wilkin Oil Co., Armentrout 1..... 25 3280
Atha Co., Roberts 1..... ¶.06 2470
Blue Rock O&G Co., Mautz 1..... * 4032
Stark County—
Lyons Co., Barber 1..... ¶.50 4788
Summit County—
Obermiller, Burgon ..... ¶.12 2945
Washington County—
O. J. Gabbert, Nichols 1..... ¶.25 1190
Heldman & Co., Alban Hrs. 1..... ¶.10 1115
Schneider & Holestein, Mendenhall 1 ..... ¶.05 1412

United States Well Completions—*Continued*

Oklahoma

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo County—		
Ohio, Lackey 6, se se sw nw 11-5n-9w	2872	3398
Creek County —		
Sinclair Prairie, Dacon 39, se nw ne se 16-17n-7e	15	2757
Hughes County—		
Nix, Warren 1-A, sec 4-6n-8e	*	930
Jackson County—		
Gulf, Eley 6, nwc se 10-1n-20w	*	1545
Kerbo-Britton, Dora 1, swc se 11-1n-20w	*	1470
English Drlg. Co., Aetna Life 1, se sec ne 26-3n-20w	*	1856
Kiowa County—		
Lindsay, Beak 1, swc 29-7n-16w	*	1250
Okfuskee County—		
Doke et al, Lowe 1, nw se ne 16-10n-11e	125	2851
Summit Dr. Co., Simmer 1, sw se nw 18-10n-11w	446	2315
Pawnee County—		
Johnson O&R Co., Finley 13, nw sw ne ne 27-20n-9e	50	3069
Pontotoc County—		
Gulf, Watson 2, ne nw ne 35-5n-4e	113	2610
Davis Dr. Co., Chandler 1, nw ne sw 35-5n-7e	60	2418
Minton et al, Chandler 1, sw se nw 35-5n-7e	35	2416
Pottawatomie County—		
Denver P. & R. Co., Houck 2, c n½ nw nw 1-6n-4e (otd 4143 ft)	350	4218
Tarter 1, se nw ne 2-6n-4e (otd 4150 ft)	50	4228
Elko O&G Co., Smith 2-A, ne sw se 26-7n-4e (otd 4160 ft)	90	4265
Alcorn, Rice 3, nw se ne 32-7n-4e (otd 4305 ft)	*	3900
Seminole County—		
Culver et al, Burton-Swan 1 "A", ne se sw 3-5n-5e	285	2657
T-N Dev. Co., Reed 1, swc ne 3-5n-5e	463	2750
Devonian, Homestake 1, ne sw ne 22-8n-7e	31	3205
Stephens County—		
Roy Johnson, Baker 1-A, c se nw 35-2s-6w	*	561

Pennsylvania

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford District—		
N. V. V. Franchot, Mgr., Trs., Brandel	5	....
J. W. Coast, McCaffery & Coast	1	....
D. W. Dale No. 2, Bing 468	2	....
Lloyd & Hardy, Meehan	3	....
M. Hungiville, McCullough	1	....
Penn Valley Crude O. Corp., Fee	2	....
Duffytown Oil Co., Sullivan	½	....
Forest Oil Corp.	1	....
Forest Pet. Corp., 2 wells	2	....
Niagara Oil Corp., 3 wells	3	....
Bradford Transit Co., 9 wells	9	....
Bradford District (Water Intake Wells)—		
Pine Run Oil Co., Bing 130-1-2-3-4-6 (5 wells)	..	....
Forest Oil Corp., 2 wells	..	....
Forest Pet. Corp., 1 well	..	....
Niagara Oil Corp., 5 wells	..	....
Middle District—		
Alice G. Harvey, Grandin	1	....
Grimm & Light, A. S. Cocks	2	....
Butler-Armstrong District—		
Harry Bupp et al, Harry Bupp 5	*	....
SOUTHWEST PENNSYLVANIA		
Armstrong County—		
Apollo Gas Co., Bleakney 1	¶.06	3772
Greene County—		
Judson Bell et al, Gabler 1	¶4.00	1396
Washington County—		
Equitable Gas Co., Weir Hrs. 1	*	3005

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Cities Service Oil Co., Burnett 35-A	¶38.7	2484
Magnolia, fee (tract 244) 71	113	3160
Fee (tract 244) 72	319	3095
The Texas Co., Boney-Magnolia 17	990	3183
Boney-Magnolia 20	227	3120
Gray County—		
Baldridge Oil Co., Davidson 2	555	3070
Danciger O&R, Inc., Powell-Beck 19	414	2955
J. M. Hawley et al, Furneaux 1	¶2	3029
The Texas Co., Davis 18	359	2850
Frashier 6	295	3292
Shaw 7	445	2805
Hutchinson County—		
J. M. Huber Corp., Henderson 1	135	3256
Phillips Pet. Co., Perkins 24	182	2858
The Texas Co., Lewis 19	250	2980
Pond 19	639	3080
Potter County—		
Whittaker & Mayer, Pavillard 1	*	915

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Kilgore Area—		
H. L. Carter et al, King 1 (1.19-ac)	750	3641
Overton Ref. Co., I&GN Ry. 2-B.	1280	3575
Ed Pace et al, Elder 6 (1.51-ac)	1200	3555
Franklin County (Talco)—		
Byrd & Frost, Inc., Phillips-Gulf (400-ac)	*	4320
Henderson County (Rowe-Baker)—		
W. R. Manning et al, Rowe-Baker 1	*	3180
Houston County (Grapeland)—		
Grapeland Oil Co., Brown 1	¶40	6050
Limestone County (Barron)—		
M. Samuel & Zephyr Oil Co., Barron 2	¶2.5	5719
Navarro County (Wildcat)—		
W. H. Warren et al, Grey 1	*	660
Smith County (Chapel Hill)—		
Shell Oil Co., Campbell 1	870	8600

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Forester et al, Trammell 1	15	1500
Tyler & Curry, Nance-Geren 1	5	1137
Wilson Oil Co., Inc., Bowden 1	†	2155
Callahan County—		
C. J. Kleiner et al, Williams 1	*	975
Comanche County—		
Howard et al, Smith 4	*	430
Jones County—		
Danciger O&R, Inc., Springfield 1	80	1883
Bert Fields et al, Barnard 4	*	3296
W. H. Peckham et al, Brock 13	362	1881
Sandy Ridge Oil Corp., Brock 1	275	1908
Texas Co., Carter 7	*	3188
Shackelford County—		
J. P. Alexander et al, Blanton 1	*	600
Roeser-Pendleton, Cook 4-B-113	475	1570
Owens-Snebold Oil Corp., Swenson 1	32	3282
Taylor County—		
Tal-Vez Oil Corp., Richards 1	310	2395

PRINCIPLES OF SEDIMENTATION

By W. H. TWENHOFEL
Professor of Geology, University of Wisconsin

A guide to better understanding of sedimentary products and structure

The professional geologist, and the student, will find this book invaluable in that it will give them an understanding of the significance of sedimentary products and structure that will enable them to understand conditions obtaining during the deposition of the sedimentary materials and the significance of observations in terms of recovering economic products from sedimentary rocks.

CHAPTER HEADINGS

1. Introduction
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3. Classification and Consideration of Environments
4. Origin of Inorganic Sediments
5. Interrelations of Organisms and Sediments
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13. Sediments of Chemical Deposition: Miscellaneous Sedimentary Products
14. Structural Features of Sedimentary Origin
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B

United States Well Completions—*Continued*

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Emma)—		
Sinclair Prairie, Cowden 10	1013	4252
Andrews County (Means)—		
Champlin & Bass, McQuatters-Standard 1	*	4596
Crane County (Jordan)—		
Sinclair Prairie, University 5-24	808	3580
Ector County (Foster)—		
I. T. I. O. Co., Johnson 1-F	538	4171
Stanolind, E. F. Cowden 31-B	378	4205
Ector County (Goldsmith)—		
Gulf, Goldsmith 251	912	4186
Goldsmith 252	1683	4211
Goldsmith 253	1023	4192
Goldsmith 255	1012	4204
Phillips-Pure, Jess Cowden 6	2668	4186
Ector County (North Cowden)—		
Barnsdall, Smith 5	1511	4190
Broderick & Calvert, Holt 11-A	1943	4428
Ector County (Wildcat)—		
Landreth Prod. Corp.-Shell, Johnson 1-A	*	5308
Gaines County (Seminole)—		
Atlantic, Riley 2-B	821	5271
Ohio, Ida Tippett 1	1065	5315
Osage Drl. Co, et al, Tippett-Ohio 5-A	792	5324
Gaines County (Wasson)—		
Continental, Wasson 7-51	800	4985
Hockley County (Slaughter)—		
J. W. Murchison et al, Slaughter 4	364	4973
Howard County—		
Ennisbrook Oil Corp., Texas Land & Mtg. Co. 20	1552	2879
Pecos County (Fromme)—		
Culbertson & Irwin, Fromme 4	65	1640
Pecos County (Lehn)—		
Anderson & Campbell, M. Lehn-Texaco 1	76	1719
Pecos County (Pecos Valley)—		
Mid-Continent Pet. Corp., Jasper 10	218	1653
Upton County (McCamey)—		
Humble, Ricker 27-A	55	2191
Sergent-Rutter & Wilbanks, Elder 5	446	2251
Ward County—		
Gulf, Hutchings 134	300	3077
G. W. O'Brien 127	254	2875
Sinclair Prairie, Archenhold 24	343	2652
Geo. Sealy 7	380	3063
Winkler County (Emperor)—		
Texon O&L Co.-Group 1 Oil Corp., Cowden-Conoco 7-27	260	2977
Yoakum County (Wasson)—		
Aloco Oil Co., Hovencamp-Texaco 6	1635	5104
Honolulu Oil Corp., Kendrick 4-825	929	5130
Humble, E. P. Stanford 1-B	151	5245
Magnolia, Mahoney 9	1415	5180
Oil Dev. Co. (Texas), Willard 4-761	1564	5200
Olson Oil Co., Willard 5-801	2194	5216
Plymouth Oil Co., Bennett 2-B	692	5245
Shell, W. M. Johnson 2	714	5251
Skelly, Hancock 4	1101	5181

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
Barnes & Traugh, Carson 1-B-a	1200	4347
L. T. Burns et al, White 97, sec 34 (pb to 3894 ft)	608	4424
Chapman & McFarlin, Wilson 5-C.	832	4386
Wilson 8-C, sec 29	600	4388
Continental Oil Co., Wilson-McCrory 8	1856	4409
King Oil Co.-Phillips Pet. Co., Wilson 6-E	984	4046
Bert Ligon et al, Anderson 7	252	4033
Petroleum Producers Co., Anderson 1	1992	4033
Southern Pet. Explo., Inc., Moss 11-B	1816	4327
The Texas Co., Wilson 37-A	1080	4391
Archer County—		
B. F. & H. Oil Co., Richardson 7, sec 2425	15	1438
W. B. Hamilton et al, Ikard 5-C	25	1151
Ikard 6-C	*	1168
Pace Pet. Corp., Abercrombie 31-B, blk 156	9	1019
Archer County (Wildcat)—		
D. R. Criswell et al, O'Donnell 1, lot 14	*	1275
Baylor County (Seymour)—		
British-American O. P. Co., Richardson 1-B	205	2537
Baylor County (Wildcat)—		
W. P. Staton-H. P. Bunch, Robertson County School 1	*	3535
Clay County (Burns-Browning)—		
L. T. Burns et al, Browning 4	592	4470
Clay County—		
C. L. Gannaway et al, Goetze-Texaco 2	3	237
Perkins & Cullum, Taylor 3, blk 36	336	1097
Riner-Fain & Stilley, Hamilton 2, blk 83	*	1150
Clay County (Wildcat)—		
Shell Oil Co., Henderson 1 (pb to 3545 ft)	338	3824
Cooke County (Walnut Bend)—		
Ed. Cox-Jake Hamon, Neu-Texaco 7-A	920	4999
Cooke County—		
Georgian Corp., Campbell 1	*	1485
Foard County (Wildcat)—		
Foster Pet. Corp., Allee 1 (pb to 2350 ft)	¶1.3	3417
Jack County (Wildcat)—		
Hanlon & Buchanan, Inc., Smith 1	*	3710
Jack County—		
Pitzer-West et al, Sloan 1, sec 2786	*	5530
Montague County (Wildcat)—		
Sinclair Prairie, Howard 1	2037	5249
Wichita County (K-M-A)—		
E. C. Oil Co., Burnside 7	488	4055
Hanlon & Buchanan, Inc., Fassett-Tuttle 7-E	298	4025
W. B. Omohundro et al, Lockridge 1	*	4510
Wichita County—		
Continental Oil Co., Waggoner Bros. 21, sec 11	*	1910
Fresno Oil Co., Foster 1	*	2104
Geo. Proctor et al, Foster 47-A, sec 1	10	1544
Wolfe & L. V. Hull, Daume 1	24	696
Wilbarger County (Consolidated)—		
Waggoner Ref. Co., Waggoner Est. 3-GG	960	3770
Wilbarger County—		
Falls Ref. Co., Owens 3	130	3200
Golding & Cochran, Waggoner Est. 7-S	7	1567
Lawson & Leavell, Feller 1, sec 109	*	1354
Young County—		
M. M. Bradley et al, Gragg 1	*	808
Chambers & Humphrey, Benson 11, sec 1392	*	960
W. G. Horn et al, Gregg 8	*	747
Chas. B. King et al, Johnson 11, lot 13	10	598
E. D. Willis et al, McCloud 2, sec 1395	10	899

South Texas

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County—		
Argo Oil Corp., Fee Roden 8-A (Hoffman)	120	2713
Alaska-Texas Oil Co., W. R. Peters 1 (WC), sec 791	*	3613
Andrus, Reed & Beason, W. R. Peters 4 (Rancho Solo)	65	1900
Continental Oil Co., Collings 13 (Hoffman)	88	2680
Driscoll 46-A (Driscoll)	425	3398
Cox & Hamon and Gorman-Yoakam, Gorman-Hoffman 4 (119) (Tarancahuas)	325	2039
Magnolia Pet. Co., Duval County Ranch Co. 23 (189), (Cedro Hill)	27	1434
D.C.R.C. 24 (189), (Cedro Hill)	25	1440
H. J. Porter & J. B. Blanchard, W. L. Rogers Estate 1 (WC),sec 273	*	4415
Marshall Purvis & Wm. Appell, Hoffman 1 (Tarancahuas)	*	2112
Southwood Oil Co., Rossi 8-A (N. Sweden)	¶20	5378
Jim Hogg County—		
Colorado Octane Co., Martinez (Trevino) 4-C, (Colorado)	275	3070
Great States Oil Corp., Martinez (Trevino) 2-A, (Colorado)	350	3029
Humble O&R Co., Atwood et al 11 (Colorado)	350	3073
Locke Purnell, East 1 (WC), sec 619	*	3260
Titanic Oil Co., Gutierrez 1, (Gutierrez)	*	3301
McMullen County—		
Marshall Purvis & Wm. Appell, N. L. & L. S. Co. 1 (WC), sec 26	*	1006
Starr County—		
Herbert Aid, Muniz 1 (WC), por 72	*	882
Interstate Minerals Corp., Green & Manning 1 (WC), share 85	*	2665
St. Mary's O&G Co., Bass 62 (Los Olmos)	1	410
Sun, Montalvo et al A-3 (Sun)	111	5008
Webb County—		
Arkansas Fuel Oil Co., Adami 7-B (Adami)	21	999
Bridwell Employes Oil Co., Adami A-5 (Adami)	35	999
Humble, Yeager 1 (Adami)	26	1002
G. F. Lawson et al, Adami 2 (Adami)	42	985
Magnolia, Benavides 23 (Volpe)	240	2478
Zapata County—		
Dulup Oil Co., Garcia 5 (Escobas)	*	1362
Ed Mathis, Martinez 96-A (Redondo)	*	1512

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Aransas County—		
Continental Oil Co., St. Charles Co. 1 (St. Charles)	†	9335
Jackson County—		
Lonnie Glasscock, Drummond 1-B (West Ranch)	1750	5775
George J. Greer, L. Ranch (4) 6 (West Ranch)	1750	5790
Magnolia, West 51-A (West Ranch)	1150	5127
Jim Wells County—		
Heyser & Heard, Garcia 1 (Ben Bolt)	650	5415
Bridwell Oil Co., Beasley 6 (Ben Bolt)	650	5252
Texas Gulf Prod. Co., Burger 1 (Reynolds)	*	5251
Nueces County—		
Sinclair Prairie Oil Co., State of Texas 6 (707), (E. White Point)	¶3	5660
Refugio County—		
Quintana Pet. Corp., Williams et al B-9 (Tomoconnor)	1750	5925
San Patricio County—		
Bay-Tex Oil Co., Blankmeyer & Revare 1 (McCampbell)	400	7230
O. W. Killam, Taft Syndicate 9 (E. White Point)	375	5612
Southern Minerals Corp., Mayo 1 (McCampbell)	750	7158
Victoria County—		
Barnsdall Oil Co., Marberry 1 (McFaddin)	325	6413
Gulf Oil Corp., Traylar B-31 (Heyser)	750	5495
John G. Mayo, Inc, et al, Ragsdale 1 (WC), Garcia sur.	*	5375
Renwar Oil Corp. & John G. Mayo, Bayer et al 1 (WC), Garcia sur.	*	6500
George E. Smith et al, Stubbs Estate 1 (WC), Manchalo sur.	*	4813

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bastrop County—		
R. R. Ogden & C. L. Riddle, Bunton Estate 2 (Riddle)	*	1828
Bexar County—		
Edwin Eckert, Gembler 1 (WC), W. Small sur	*	801
Caldwell County—		
Ralph L. Ogden, Talley 3 (Dale)	750	2286
Tellmar Oil Corp., Flemming 3 (Salt Flats)	50	2724
Guadalupe County—		
A. J. Holifield, Day 1 (WC), Opens Day pool	21	2830
E. A. Weyel et al, Malthe 1 (Elm Creek)	10	712
Medina County—		
York Pet. Co., Schmidt 1 (WC), sec 908	*	948

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Fairbanks—		
H. E. Williams, Taylor 1	*	7226
Friendswood—		
Blaffer, Woodburn 1	605	6076
Humble, Moore 3	331	6047
Humble—		
Aquilla Oil Co., Herman 2	32	987
Joe's Lake—		
Republic, Fee 33	441	7710
Lovall Lake—		
Humble, Steinhagen B-4	116	7802
Markham—		
Hamil & Hamil, Sisk-Myers 7	375	3276
Segno—		
J. K. Dorrance, Wing 5-A	366	8165
Silsbee—		
Republic, Fee 27	480	6909
Thompson—		
Humble, Davis 25-Y	96	4345
Wolters A-5	526	5417
Tomball—		
Humble, Tallman 3	293	5625
West Beaumont—		
Stanolind, McCormack 12	123	5890
West Columbia—		
Hogg Oil Co., Fee 9	477	5481
Galveston County—		
Continental, Lobit 1, ne of League City, Perry & Austin sur.	*	10743
Montgomery County—		
Dick Schwab, Womack and Sturm, Foster Estate 1, Willis area, De La Garza sur.	*	8302

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
O. B. Cunningham et al, Workman 2	¶2.00	1448
Hope Natural Gas Co., Spruce Boone Land Co., 7910	¶.50	2815
Clay County—		
Elk River Gas Co., Ray et al 1	¶.34	2436
Pitts & W. Va. Gas Co., Wilson 7718	¶	1655
Kanawha County—		
United Carbon Co., Bumgardner et al 1	¶4.52	5036
Columbian Carbon Co., Payne 1	¶.58	5207
Lincoln County—		
Bradyville Gas Co., Sweetland Land & Mining Co. 3	¶.39	3105
Ritchie County—		
McBurney et al, Perkins 1	2	2040
Roane County—		
Reedy O&G Co., Moore Hrs. 2	5	1836
Tyler County—		
Cease Baker et al, Smith 1	*	550

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Big Horn County (Garland Field)—		
Mule Creek Oil Co., Binney-Sessions 1, sec nw nw 34-56n-97w	¶1.5	2205

WILDCAT REPORT
New Starts and Completions

ARKANSAS
FIRST REPORT

Calhoun County—British-American Oil Co., Freeman-Smith Lbr. Co. 1, nec 17-15s-13w, materials. (Smackover lime test).

CALIFORNIA
FIRST REPORTS

Orange County—Bird & Chambers' No. 1 Lamson & Magnolia sec 31-4-10, Garden Grove area, material.

Kern County—Richfield's Tejon 1, sec 2-10-19, Grapevine area, lcn.

ILLINOIS
FIRST REPORTS

Clinton County — L. G. Muller's Wm. Schmidt 1, se 35-2n-5w, rig.

Franklin County—C. D. Neff et al's Downey 1, sw sw sw 26-7s-4e, moving in material.

Jasper County—Pure Oil Co.'s Warren Consolidated 1, ce½ ne nw 33-6n-10e, moving in material.

Jefferson County—Magnolia Petroleum Co.'s L. Jones 1, ne ne ne 10-3s-2e, lcn.

Lawrence County—LaSalle Oil Co.'s Wright 1, ne nw ne 35-2n-5w, to deepen from 2,770 feet to St. Louis, moving in material.

Marion County—The Texas Co.'s R. N. Davis 1, nw ne ne 21-1n-2e, lcn.

Perry County—Magnolia Petroleum Co.'s Bruns 1, se nw nw 15-4s-3w, lcn.

Randolph County—Travis et al's Lauber 1, c nw sw 15-5s-7w, dr. Fisher's Utchman 1, sw ne nw 7-6s-5w, to deepen from 1,650 feet. G. & L. Oil Co.'s Schultz 2, nw 2-7s-6w, dr.

Saline County—Oliver Drilling Co.'s Wickwire 1, ne ne sw 15-10s-6e, rig.

Wabash County—Mayhen et al's Hogan 5, se ne 1-1n-12w, deepening from 1,700 feet.

White County—Kingwood Oil Co.'s Martin 1, c nw sw ne 13-7s-8e, rig.

COMPLETIONS

Bond County—Thornwell Drilling Co.'s (R. F. Anderson's) J. Morris 1, nw nw nw 16-6n-3w, LaGrange tnp, top Aux Vases 980 feet, abnd 1,200 feet.

Brown County—F. M. Coleman's S. Newenham 1, nw ne se 7-2s-3w, top Niagaran 640 feet, abnd 730 feet.

Clark County—Kingwood Oil Co.'s Booth-Poorman 1, sw nw ne 17-11n-14w, top Devonian 1,217 feet, abnd 1,325 feet.

Crawford County—Denver Producers & Refiners' Dennis 1, sw sw nw 14-7n-14w, Oblong tnp, top Devonian 3,205 feet, abnd 3,504 feet.

Edwards County—Kingwood Oil Co.'s S. Frost 1, c se ne ne 8-3s-14w, French Creek tnp, abnd in St. Louis at 3,151 feet.

Fayette County—Kingwood Oil Co.'s Sloane 1, c ne se ne 29-9n-2e, Bowling Green tnp, top St. Louis 2,002 feet, abnd.

Ford County—Nelson, Brown & Erp's Stroh 1, Drummer tnp, top Devonian 773 feet, top St. Peter 2,090 feet, showed fresh water, abnd.

Jefferson County—Gibson & Jennings' Chas. Hall 1, c ne se nw 36-2s-1e, Casner tnp, junked at 1,250 feet.

McDonough County—R. G. Gridland's S. E. Roberts 1, se sw nw 18-6n-4w, Hire tnp, top Maquoketa 735 feet, abnd 740 feet.

Monroe County—C. E. Williamson's (H. W. Peter's) Schuster 1, nw nw sw 13-3s-8w, Prairie Long tnp, top Trenton 1,746 feet, abnd 1,800 feet.

Pike County—West Pike Petroleum Co.'s O. H. Reinhardt 1, nw ne nw ne 35-4s-7w, Kinderhook tnp, abnd 121 feet.

White County—Sun Oil Co.'s Greathouse 1, sw se nw 4-5s-14w, top McClosky 2,903 feet, flowed 240 bbls. oil in 24 hours to open new horizon for Ford field. Carl Robinson's Randolph 1, nw nw nw 14-6s-10e, Emma tnp, top Fredonia 3,077 feet, abnd 3,131 feet.

KANSAS
COMPLETIONS

Butler County—National Refining Co.'s Smith 1, ne nw se 9-28-5e, 2½ mi sw Haverhill pool, top Mississippi 2740 ft, top Chat 3113 ft, top Misener 3160 ft, top Simpson 3163 ft, top Arbuckle 3198 ft, td 3213 ft, abnd.

Marion County—Polhamus et al's Noone 1, nwc se 18-18-3e, 6 mi n Hillsboro pool, top Viola 2860 ft, hfw 2889 ft, td 2907 ft, abnd.

Reno County—Shell Oil Co.'s Frazee 1, ne se ne 33-25-8w, 5 mi ne Lerado pool, top Kinderhook 3892 ft, top Chat 4056 ft, top Viola 4125 ft, top Simpson 4156 ft, top Arbuckle 4240 ft, td 4280 ft, abnd.

Russell County—Ray Webb et al's Schmidtberger 1, cnl ne sw 17-13-15w, e of Trapp pool, top Arbuckle 3308 ft, tested 3 gal oil per hr, td 3353 ft, abnd. I. W. Murfin et al's St. Aubyan 1, csl sw se 1-15-15w, s Big Creek pool, base Kansas City 3168 ft, top Arbuckle 3238 ft, td 3259 ft, abnd.

SOUTH LOUISIANA
FIRST REPORT

Lafourche Parish — Ernest Cockrell's Lafourche Land Co. 1, Bay Brousle area, 100 ft n and 100 ft w of sec nw¼ nw¼ of sec 32-18s-22e, lcn.

COMPLETION

St. Landry Parish—Pure's Boagni 1, Opelousas area, sec 41-6s-4e, abnd 9605 ft.

NORTH LOUISIANA
FIRST REPORT

Madison Parish—Gulf, Sondheimer 1, se nw 33-18n-12e, rig.

COMPLETION

Bienville Parish — Harry Hanbury and Standard Oil Co., Holstun Unit 1, ne sw ne 29-18n-6w, elev 277 ft, top red beds 3748 ft, top anhydrite stringer 4987 ft, top lime 6940 ft, abnd 7502 ft.

MICHIGAN
FIRST REPORTS

Allegan County—Weller & Dapars' Barbee 1, nw nw se 18-1n-14w, rig. Fred Pope's Harnish 1, ne se sw 18-4n-12w, lcn. Chief Oil & Gas Co.'s Federal Land Bank 1, ne ne nw 36-3n-11w, dr.

Cass County—Silver Creek Oil Co.'s Finley 1, ne nw sw 23-5s-16w, lcn.

Huron County—Wallace Markle's Johnston 1, se se sw 8-17n-14e, rig.

Jackson County—Alfred Morency's Brown 1, se sw se 2-4s-12w, rig.

Ottawa County—Red Man Oil Co.'s Edson 1, se nw nw 28-6n-13w, dr. Lenoran Pet. Co.'s Smalligan 1, ne ne ne 29-5n-13w, dr.

Van Buren County — Kilgus & Kelleys' Wright 1, ne sw se 17-2s-17w, rig. Michi-Cal Oil Co.'s Watson 1, se sw ne 13-4s-14w, rig.

Wexford County—R. D. Kirkham's Whaley 1, se sw se 24-21n-9w, dr.

COMPLETIONS

Calhoun County—Transwestern Oil Co.'s Bole 1, se se nw 13-3s-8w, Traverse 1482 ft, abnd 1491 ft.

Clare County—Sun's Switzer 1, nw ne 26-19n-3w, Dundee 3795 ft, abnd 3897 ft.

Kent County—C. J. Neal's Dotzert 1, ne ne se 33-5n-10w, Traverse 1972 ft, abnd 2047 ft.

Missaukee County—Freeman Oil Co.'s School 1, se sw 36-22n-8w, Dundee 3931 ft, abnd 4053 ft.

Ottawa County—Crown Dev. Co.'s Reimold 1, sw nw ne 34-5n-15w, Traverse 1516 ft, td 1520 ft, pumping and flowing 245 bbls. natural.

Van Buren County—H. A. Marchant's Filbrandt 1, sw sw se 9-1s-16w, Traverse 1049 ft, abnd 1070 ft. H. A. Marchant's Slee 1, nw se nw 17-1s-16w, Traverse 984 ft, abnd 1060 ft. Fortney Oil Co.'s Ingels 1, sw sw sw 1-3s-15w, Traverse 1053 ft, abnd 1103 ft.

MISSISSIPPI
FIRST REPORTS

Clarke County—Miss Oil Co., State 1, c se ne 16-2n-16e, materials.

Madison County—Ralph A. Johnston, Ray & Dinkins 1, sw sw 14-10n-3e, materials.

Yazoo County—Kingwood Oil Co., Wilburn 1, ne ne 31-12n-3e, materials.

NEW MEXICO
FIRST REPORT

Lea County—Lou Stogner & Sam Weiner's State 1, c se se 30-12s-32e, machine for deep test.

COMPLETION

Eddy County—Mac T. Anderson et al's L. J. Root 1, c sw sw 12-17s-29e, elev 3640 ft, salt series 435-910 ft, top Yates 1065 ft, top red sand 1935 ft, top lime 2280 ft, pay 2516-63 ft, shot 120 qts nitro 2514-57 ft, flowed 90 bbls oil 21 hours open tubing.

OKLAHOMA
FIRST REPORTS

Beckham County—F. Coogan's Kinchen 1, sec 4-9n-25w, rig.

Coal County—Berry Brothers' Franklin 1, se sw ne 35-1n-8e, rig.

Hughes County—Tom Nix's Warren 2, c e½ ne se se 4-6n-8e, dr.

Kiowa County—Southwestern Oklahoma O. & G. Co.'s Foltz 2, nw se se 10-6n-18w, lcn.

Murray County—C. P. Williams' Fee 1, nec se 22-1n-4e, dr.

Seminole County—G. W. Shobert et al's Parsons 1, swc nw 29-11n-6e, pits.

Washita County — Continental Oil Co.'s School Land 1, c ne 16-8n-16w, surface pipe set.

COMPLETIONS

Creek County—Burke-Greis Oil Corp. et al's Brown 1, ne se se 19-16n-10e, between Slick

Was it about the farmer's daughter or the traveling salesman? Dick Schwab, right, is evidently telling a good yarn to Ralph Sturm, geologist, left; Dave Fransen, scout, next to Sturm and Moris Womack, attorney. The story was told on Schwab, Sturm and Womack's Foster Estate 1, wildcat in Montgomery County, Texas.

and Bristow pools, top Dutcher 2819 ft, td 2889 ft, abnd.

Lincoln County—G. Travis' et al's Teter 1, nwc sw 24-17n-2e, 3 mi w Sporn pool, top Wilcox 4732 ft, td 4779 ft, abnd.

Payne County—Gardner Petroleum Co. et al's Wetzel 1, ne sw se 2-18n-1e, 2 mi n Ramsey pool, top Wilcox 5049 ft, perf 28 shots at 4865-81 ft, in Misener, td 5409 ft, abnd. T. N. Berry's Slick 1-A, nw sw se 24-18n-4e, 1½ mi e Broyles pool, top Big lime 2883-2900 ft, Oswego 2920-59 ft, td 3719 ft, pb 3655 ft, shot 24 perforations 2883-2900 ft, 7 shots 2925-55 ft, 200 bbls, 30 gr.

Pontotoc County—Starr O. & G. Co.'s Bowlby 1, swc nw 29-5n-4e, 5 mi w Beebe pool, top Wilcox 2903 ft, td 2908 ft, abnd.

SOUTH TEXAS

FIRST REPORTS

Aransas County—Continental Oil Co.'s St. Charles Co. 2, 3690 ft n line, 1020 ft e line, sec 196, R. D. Blassman sur, 8½ mi ne Lamar, ru relief well to No. 1. Tom Graham Oil Co.'s T. P. McCampbell 1, 466 ft se and sw lines of blk 19, McCampbell Ranch subd, James McKay sur, 1¾ mi ne McCampbell field, sd for heavier rig.

Guadalupe County—D. Eickenroht et al's Wm. Walkers 1, 270 ft s line, 425 ft e line, Maria Esnaurizar sur, sec 206, 3 mi sw of Geranimo, loc.

Jackson County—John Coffee & D. C. Norwood's Genthlin 1, 300 ac tr, O. S. York sur, ab. 307, 1½ mi sw Mauritz field, moving in.

Jim Wells County—Texas Gulf Producing Co.'s Theresa M. Gallagher 1, 467 ft ne and se lines, J. H. Gallagher subd Casa Blanca gr, 4 mi se of Sandia, moving in.

Nueces County—Humble O&R Co.'s D. F. Duncan et al 1, c lot 2, blk 50, Flour Bluff and Encinal Farm Lots subd, 1 mi sw Flour Bluff field, loc.

San Patricio County—Texas Gulf Producing Co. et al's S. A. Loan & Trust Co. 1, 467 ft e line, midway between n & s lines 80 ac lease in McAubey sur, scales 700 ft w line, 614 ft se lines, sur 3 mi sw Sinton, loc.

Starr County—Herbert Aid's Fidel Sulina 1, 1350 ft n line, midway between e & w lines, sh 8A, Porcion 72, 5 mi w of Rio Grande City, loc.

Victoria County—John G. Mayo, Inc.'s et al John Hubalah 1, 466 ft s and w lines 252 ac tr, Valentine Garcia sur, 3½ mi e E. Telfener, ru.

COMPLETIONS

Aransas County—Continental Oil Co.'s St. Charles Co. 1, 3190 ft n line, 1020 ft e line of sec 196, R. D. Blassman sur, 8½ mi ne Lamar, junked 9335 ft.

Bexar County—Edwin Eckert's E. L. Gembler 1, 5000 ft n line, 990 ft w line, 72 ac lse out of 456-ac W. Small sur, 5 mi nw Southton, abnd 801 ft.

Duval County—Alaska-Texas Oil Co. et al's W. R. Peters 1, 330 ft n line, 990 ft e line of se quarter B.S.&F. sur No. 791, 3 mi e Lopez field, deepened and then abnd 3613 ft. J. J. Porter & J. B. Blanchard's Rogers Estate No. 1, 2163 ft n line, 330 ft e line of sur No. 273, 1 mi sw Fitzsimmons field, abnd 4415 ft.

Guadalupe County—A. J. Holified's Day 1, 158 ft from s line, 1000 ft e line tr, James Hinds, 2 mi se Luling is completed 21 bbls per day on pump, 2830 ft.

Jim Hogg County—Locke Purnell's East No. 1, 330 ft s and 330 ft e of ne corner of sur No. 44, but in sur No. 619, Sun Farmout, 5 mi ne of Randado, abnd 3260 ft. Titanic Oil Corporation's Gutienez, 330 ft w and s lines blk 2, Mayfair Oil Corp. subd, F. Guiterrez sur No. 163, ½ mi e of No. 1, abnd 3301 ft, drill stem test 3273-3301 ft, recovered 120 ft of mud, 360 ft sand ⅜-inch choke in 25 minutes.

McMullen County—Marshall Purvis & Wm. Appell's Nueces Land & Livestock Co. 1, sur 26, H&TB sur, 7 mi n of Munson field, abnd 1006 ft.

Medina County—York Pet. Co.'s Schmidt 1, 330 ft s and se lines J. De La Roche sur 908 (2 mi e of Noonan), abnd 948 ft.

Starr County—Herbert Aid's Muniz 1, 890 ft s of s line of sh 7-B, 221 ft e of w line of por 72, Camargo Jurisdiction and in share No. 1, temp abnd 882 ft. Interstate Minerals Corporation's Green & Manning 1, 375 ft n line, 245 ft w line of blk 7, sh 85, por 81, 1½ mi w of Ricaby, abnd 2665 ft.

Victoria County—John G. Mayo, Inc. et al's Ragsdale 1, 660 ft e line, 319 ft se line 500-ac lse, Valentine Garcia sur, ab 45, backed off 1200 ft of stuck at 4675 ft in sidetracked hole, abnd 5375 ft. Renwar Oil Corp. & John G. Mayo's Bayer et al 1, 466 ft nw line, 2178 ft sw line of 121 ac tr, J. Diego Garcia sur AB-39, 7½ mi se of Victoria, 3 mi w of Dacasta, abnd 6500 ft. George E. Smith et al's Stubbs Estate 1, 250 ft nw line of 240-ac tr, 300 ft ne line of Rafael Nauchalo sur AB-487, 2 mi s of Victoria field, abnd 3319 ft in sidetracked hole 4813 ft.

EAST TEXAS

FIRST REPORT

Van Zandt County—J. B. Daniels et al's W. R. Odom 1, 3100 ft from s and 2000 ft from e lines of J. Garcia sur, 4 mi ne Mabank, elev 411 ft, rig.

Shelby County—W. C. Parker et al, Fred Wiley 1, A. H. English sur (94-ac), moving in materials (3000 ft test).

COMPLETION

Navarro County—W. H. Warren et al's L. Grey 1, 2200 ft ne of sw and 150 ft nw of se lines of E. Powers sur, 9 mi se Kerens, elev 274 ft, abnd 660 ft.

WEST TEXAS

FIRST REPORTS

Andrews County—Illinois Oil Co. et al's University 1, c nw nw sec 14, blk 12, lcn for 5600-ft test.

Terry County—Tide Water Associated Oil Co.'s Lowe 1, c ne sw PSL sec 3, blk C-37, lcn.

COMPLETION

Ector County—Landreth Prod. Corp.-Shell Oil Co.'s Johnson 1-A, se se nw T&P sec 43, blk 43, T-1-S, elev 3046 ft, top anhydrite 1580 ft, top Yates 2800 ft, top brown lime 3850 ft, top Clear Fork 5155 ft, top water 5215 ft, abnd 5308 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—Jim Fish et al's A. B. Clagett 1, 850 ft from n and 150 ft from w lines of Rachel Storey sur A-373, 2 miles ne Archer City, lcn.

Cooke County—Big Indian Oil & Dev. Co.'s M. P. Morton 2, 1400 ft from n and 950 ft from w lines sec 1, E. T. Ry. sur A-365, 6 mi s by e Gainesville, dr 330 ft. C. V. Minnich et al's Stout & Brewer 1, 850 ft from se and 467 ft fr sw lines of J. Rodriquez sur A-880, 2½ mi s by e Myra, rig.

Jack County—B. C. Gilmore et al's Mrs. Kate Hoefle 1, 467 ft from n and w lines of R. Maine sur A-2121, but in T. D. Sporer sur A-1887, 3 mi se Antelope, sp.

COMPLETIONS

Archer County—D. R. Criswell et al's A. C. O'Donnell 1, 680 ft from s and 150 ft from w lines lot 14, Crawford Pasture subdiv of I. Holman sur A-162, top Gunsight lime 1269 ft, abnd in water 1273-75 ft.

Baylor County—W. P. Staton & Howard P. Bunch's Robertson C.S.L. (2593-acre) 1, 3300 ft from n and 330 ft from e lines of Robertson C.S.L. sur, abnd 3535 ft.

Clay County—Shell Oil Co.'s H. Henderson 1, 990 ft from n and 1250 ft from w lines TE&L Co. sec 2605, td 3824 ft, pb to 3545 ft shot 20 qts nitro 3513-23 ft, pumped 338 bbls oil initial.

Foard County—Foster Pet. Corp.'s Allee 1, 330 ft from n and 660 ft from e lines of w 140 acres of s½ H&TC sec 314, blk A, dry in Ellenberger section at 3340-3417 ft and pb to 2350 ft; initial 1,310,000 ft gas, 880 lbs. rock pressure at 2300-29 ft.

Jack County—Hanlon & Buchanan, Inc.'s A. T. Smith 1, sec 2, S. P. Ry. sur A-2175, abnd in shale 3710 ft.

Montague County—Sinclair Prairie Oil Co.'s A. P. Howard 1, 1480 ft n and 420 ft e of m/w/ sw corner of W. Wallace sur A-841, ¾ mi w Bonita, top Canyon 1560 ft, top Bend lime 5151 ft, broken pay 5241-49 ft, flowed 264 bbls 40-gravity oil natural 3 hours via open tubing, gas/oil ratio 560/1.

TEXAS GULF COAST

FIRST REPORTS

Galveston County—Continental's Stewart Title 1, ne League City, 1400 ft se of Lobit 1, Perry & Austin survey, lcn.

Jefferson County—Hebert & Smith, Titanic's Clubb Estate 1, Lawhorn area, 466 ft out of the nec w 60-ac of 100-ac tr, J. C. Lawhorn sur, lcn.

Liberty County—Gulf's Kirby 1, Tarkington prospect, 1400 ft fr n and e line of Hugh Means sur, lcn.

Matagorda County—Texas Co.'s Taylor 1, Sugar Valley area, 660 ft se of nw line and 1980 ft ne of sw line of 985.58-ac tract, F. George sur, lcn.

COMPLETIONS

Galveston County—Continental's Lobit 1, ne of League City, blk 6, Perry & Austin sur, abnd 10,743 ft.

Montgomery County—Dick Schwab, Womack and Sturm's Foster Estate 1, Willis area, 466 ft fr n and w lines of 160-ac tract, De La Garza sur, abnd 8302 ft.

Two new South Texas oil areas named

J. M. Hancock, chairman of the Oil Field Nomenclature Committee of the South Texas Geological Society, has announced the names of two new fields. The area opened by Continental Oil Company's St. Charles Ranch Co. 1, in the R. D. Blassman Survey No. 196, Abstract 32, Aransas County, has been named St. Charles. The name Fagan has been given the area opened by C. L. Norsworthy et al's B. J. Fox 1, in the James Fagan Survey, Abstract 27, Refugio County.

Wade City hearing cancelled

A scheduled hearing on special operating rules for the Wade City field, Jim Wells County, has been indefinitely postponed by the Texas Railroad Commission at the request of the applicant.

Recycling plant for Grapeland

Gasoline Production Corporation has been granted a permit by the Texas Railroad Commission to operate a recycling plant in the Grapeland field, Houston County.

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Box 28, c/o The Oil Weekly,
Houston, Texas.

NOTES FOR THE Equipment Buyer and User

Lock Nut
LAMSON & SESSIONS

Lamson & Sessions, 1971 West 85th Street, Cleveland, has introduced the Lamson Stay-On Lock Nut with an automatic locking principle.

The locking portion of the nut consists of a slotted raised crown. The ring formed by the crown is distorted sufficiently to produce a slight oval section. By heat treating the nut to the proper hardness, the crown is given the permanent set and resilient spring characteristic upon which the locking action depends.

Lamson & Sessions Nut

The nut spins on the screw threads freely until the end of the bolt encounters the threads in the deformed crown section. The wrench is then applied to force the bolt or screw into the crown section which is forced back to its original circular shape, thus developing a vise-like frictional grip. They can be made of any material suitable for the manufacture of nuts.

Crude-Oil System for Diesel Engines
CATERPILLAR TRACTOR COMPANY

A special crude-oil-bearing fuel system has been developed by Caterpillar Tractor Company, Peoria, Illinois, and is now available for all 5¾- and 5¼-inch "Caterpillar" Diesel engines. Extensive laboratory and field tests have proven the system highly satisfactory, the company says.

In the new "Caterpillar" system, crude oil passes from settling tanks through a heat exchanger to the fuel transfer pump on the engine. From the pump, it goes through a gross filter up to the standard engine fine filter. From there it passes through the fuel injection pumps into the fuel injection valves, and into the cylinders of the engine.

Settling tanks are recommended with the system to lessen the filtering required by the gross filter. When using these tanks, the fuel should be allowed to settle for at least 48 hours, and two or more tanks should be used, each of sufficient capacity to supply fuel for at least 48 hours of operation.

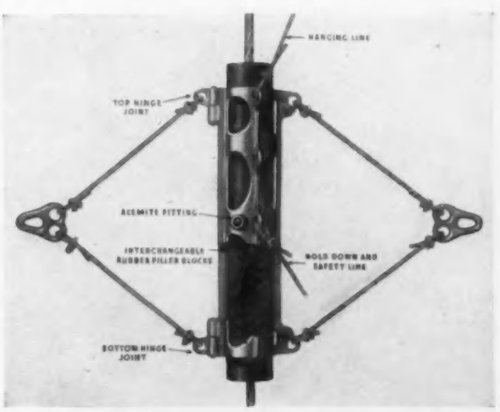
The gross filter removes the major amount of the remaining dirt and abrasives from the oil. It consists of two compartments approximately 18 inches high by 8 inches in diameter, mounted on a base which also acts as a manifold for the oil. Each compartment contains two large filter elements, which can be easily replaced when necessary. A pressure gauge on the outlet side of the filters indicates when this should be done. A gauge is also used on the inlet side of the filters to indicate whether or not there is sufficient pressure on the fuel. A valve permits using only one compartment or both together, as desired, and the elements in either compartment may be changed without shutting down the engine.

The crude-oil-injection equipment is the same in design as the standard "Caterpillar" Diesel fuel system. However, it is made of corrosive-resistant steel and has certain differences making it applicable to crude oil use. Like the standard Diesel fuel system, it has absolutely no operating adjustment. It provides satisfactory combustion throughout the entire speed and horsepower range of the engine, the company says.

Performance is equally satisfactory, and is such that the regular Diesel fuel power curves apply to the crude oil burning engines.

Wire-Line Guide
PATTERSON-BALLAGH CORPORATION

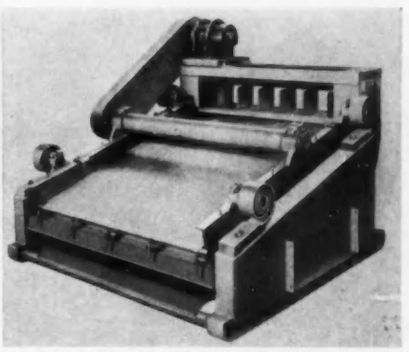
Patterson-Ballagh Corporation, 1900 East 65th Street, Los Angeles, has developed a hinged type, 4-section wire-line guide. The two halves of the metal housing are held together by top and bottom hinge joints and clamped with lock nuts on the opposite side for quick removal of the rubber cylinder. This improvement is available only in the 4-section Patterson-Ballagh Wire-Line Guide. A hanging line and a hold-down line are provided to stabilize the guide.



Patterson-Ballagh Wire-Line Guide

Mud Conditioner
CHAIN BELT COMPANY

Chain Belt Company, Milwaukee, has announced the Rex mud conditioner for conditioning rotary drilling mud. It is designed, according to the manufacturer, to insure high-capacity clean screening at low cost.



Rex Mud Conditioner

It incorporates several design features to facilitate removal of shale, sand and cuttings from drilling mud, including a 20-quare-foot screen area, a screen which stretches crosswise and lengthwise to eliminate dead spots, cushion rubber screen cloth support, stainless steel screen cloth, oil-lubricated vibrator and feed control gates. The unit is easily moved from one location to another.

Insert Pump Anchor
MERLA TOOL CORPORATION

A new and improved insert pump anchor has been announced by Merla Tool Corporation, Box 2576, Dallas, Texas. The tool permits setting the pump at any depth, and resetting without being removed from the tubing.

The fluid area through the new tool is twice that of the previous model, the packing sleeve has been shortened and new controlled expansion features added. New and heavier hook wall assembly with improved friction springs have been provided to make the anchor easier to set and reset.

Fabric Wrapper
DEARBORN CHEMICAL COMPANY

A pipe wrapper described as providing strength, pliability and resistance to moisture penetration, has been announced by Dearborn Chemical Company, 310 South Michigan Avenue, Chicago.

The wrapper finds application in protection of underground and exposed pipe of all sizes in combination with protective coatings. It acts as a shield and seal to the pipe coating, keeping out moisture and oil and preventing

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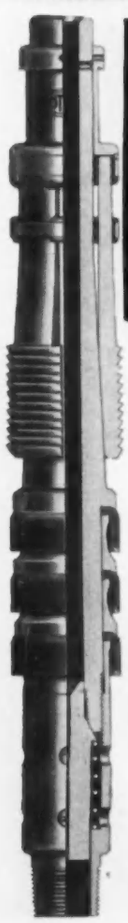

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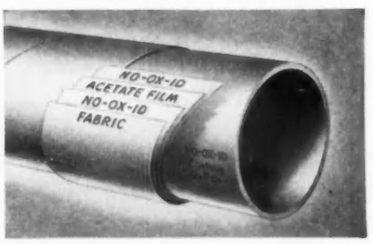
NOTES FOR THE Equipment Buyer and User



Dearborn Fabric Wrapper

mechanical injury due to soil or abrasive action.

It consists of a fabric laminated with a sheet of acetate membrane.

The fabric provides necessary toughness and strength to enable a tight wrap with either machine or hand application. The flexibility of the wrapper makes it particularly effective for hand application over pipe joints and other irregular surfaces without danger of cracking. The combination of fabric, acetate film, and "No-ox-id" provides a density that offers high resistance to penetration of moisture and oil and gives it a high dielectric strength, according to the manufacturer.

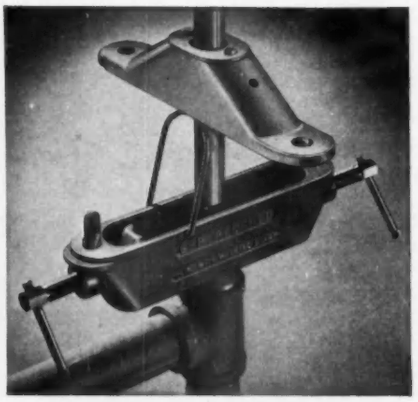
This wrapper is intended to be used with regular "No-ox-id" coatings, but can also be applied to protect other coatings as well. The fabric on the outside of the wrapper provides a good bonding surface where an exterior protective coat is to be applied.

Stuffing Box

GUSTIN-BACON MANUFACTURING COMPANY

A new stuffing box utilizing a new packing element, Meshtite rubber, has been announced by Gustin-Bacon Manufacturing Company, Kansas City. It is being marketed as the G-B Red-Hed stuffing box.

The device, according to the manufacturer, provides a seal with only slight pressure, greatly reducing wear on the rod and requiring packing at much less frequent intervals. It is supplied in three models—regular, with a wobbler, and a twinset.



G-B Red-Hed Stuffing Box

Pipe Wiper

PATTERSON-BALLAGH CORPORATION

Patterson-Ballagh Corporation, 1900 East 65th Street, Los Angeles, California, has announced improvements in its large rubber pipe wiper introduced several months ago. The wiper has been

Patterson-Ballagh Pipe Wiper

redesigned with large peek holes so that the operator can watch the mud level drop when swabbing, removing an objection of the former wiper made of a solid, molded piece of rubber that prevented the driller from observing the mud level in the casing.

The new wiper is made in five sizes, diameters ranging from 9½ inches to 19 inches, to fit any size drill pipe. Because of its flexible center, it cleanly wipes mud or muck from the drill pipe and does not hinder collars and protectors from coming up through the wiper. The wiper is made from specially molded rubber, reinforced at the periphery with a flat metal inserted disc. No metal is exposed. Windows in the web provide a saving in weight but no reduction in the strength of the rubber. The wiper is placed under the rotary table.

New Movable Walls Brochure Announced By Johns-Manville

A new 20-page illustrated brochure, "Transite Movable Asbestos Walls," has been issued by Johns-Manville, 22 East 40 Street, New York. It gives case histories of installations, construction details and specifications, as well as descriptive information on movable walls for subdividing offices, factories and stores. Many decorative possibilities are illustrated.

Gears

Brad Foote Gear Works, 1301 South Cicero Avenue, Cicero, Illinois, has issued a 246-page catalog giving complete descriptions, specifications and application-tables of its line of gears, reducers, cog belts, sprockets, bearings, pulleys and chain. Line-drawings illustrate most items.

NOTES FOR THE Equipment Buyer and User

Centrifugal Pump
WORTHINGTON PUMP & MACHINERY CORPORATION

A new balanced monobloc centrifugal pump, wherein the motor and pump have been engineered as an integral unit of balanced functional design in contrast to merely adapting a motor to a pump, has been announced by Worthington Pump & Machinery Corporation, Harrison, New Jersey.

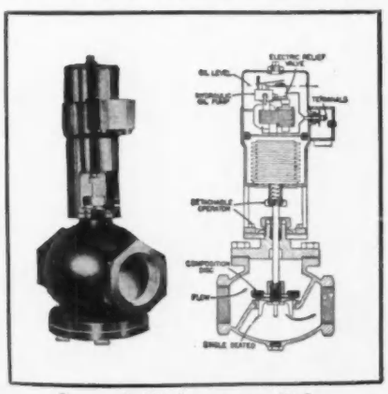
Worthington Centrifugal

The new unit is compact, requiring a minimum of floor space, yet is provided with ample room for repacking the stuffing box. A shaft of large diameter, on rigid bearing mountings, maintains concentricity in all rotating parts, thereby increasing packing life. The new drip-proof motor features a directed flow of ventilating air which prevents drawing of moisture into the motor, according to the manufacturer.

The new unit is offered in sizes of from 1 inch to 4 inches, with capacities to 1000 gallons per minute against heads up to 280 feet. It is available in bronze fitted, all-iron and all-bronze construction, horizontal or vertical mountings, with motor of any electrical characteristic.

Hydramotor Valve
GENERAL CONTROLS COMPANY

General Controls Company, Glendale, California, has announced a new hydramotor valve, a hydraulically-operated motor valve for handling air, gas, water, oil, brine or saturated steam. It is described as the culmination of four years of intensive research, engineering and testing in both laboratory and field.



General Hydramotor Valve

The valve is of the full-ported single-seated type and affords 100 percent tight shutoff in any position. The electric pilot valve has a simple, two-wire current failure control with current consumption of 60 VA during the opening cycle and 5 VA when open. No gears are used and there is only one internal switch. The entire operator is totally enclosed, sealed in oil, and is drip-proof. There are a minimum number of moving parts, all of which are bathed in oil, and the entire operator is detachable from the valve body.

Bearings

Koppers Company, Bartlett Hayward Division, Baltimore, Maryland, has issued a booklet describing its new Fast's multiple oil film bearing. The booklet outlines the history of bearings, discusses the principle of Fast's bearing, describes and illustrates its design; provides tables of dimensions and load capacities, dimensions of standard bearing housings, recommended shaft sizes, dimensions of lock nuts and proper oil levels.

The bearing carries the load on a plurality of perfect wedge-shaped oil films which prevent metallic contact and wear and eliminates vibration and noise. The load-bearing wedge-shaped oil films are automatically maintained over the full bearing surface, since each bearing is so designed that it acts as a centrifugal viscous feed pump, drawing oil from the bearing housing reservoir and distributing it throughout the bearing. A surplus of oil is circulated and acts as a cooling medium, eliminating high local temperatures in the oil film.

Pump Selection

Complete selection tables, typical specifications, principal dimensions and other engineering information are incorporated in recent pump bulletins of Fairbanks, Morse & Company to simplify the problems of the engineer selecting pumping equipment. The data given in these bulletins permits the engineer to outline preliminary plans, make tentative selection and write specifications. In this way he is able to do a great deal of preparatory work from the bulletin, making his tentative selection more accurate and specifications more complete.

Socket Screws

A new bulletin containing information on prices and sizes of socket screws has been published by the Mill Supply Division of The Bristol Company, Waterbury, Connecticut. It is designated Bulletin 840.

Fully described are screws with multiple-spline design that gives the added strength needed for tough service. This design makes it practical to make Bristo set screws in sizes as small at Number 4 and cap screws in sizes as small as Number 3 wire size.

REED'S 'B-R' DRILLING BIT WITH WIRE LINE RETRACTABLE CORE BARREL

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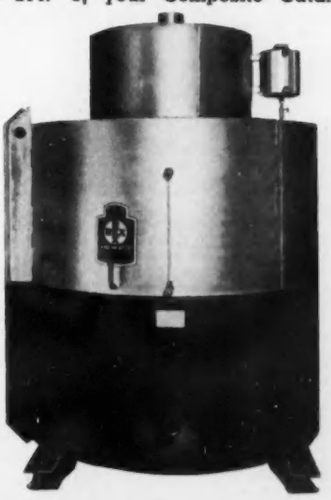

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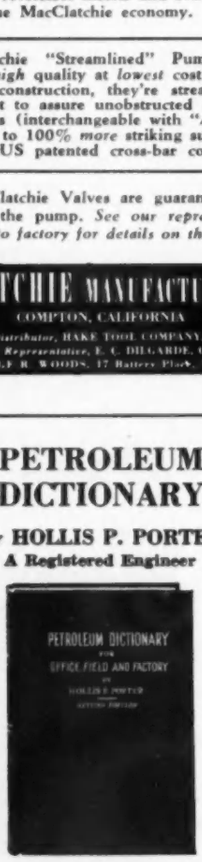

This work grew out of a demand for some source of definition for the terms used by the petroleum industry. It contains over 3,000 definitions of words used constantly by all phases of the petroleum industry. It was published in 1936 and has found its way into engineering departments, legal departments and land departments of producing concerns, as well as to the desks of executives of the petroleum industry.

Manufacturers also find it valuable for reference. Advertising agencies find it a valuable addition to the library.

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NOTES FOR THE Equipment Buyer and User

John A. Geismar, National Supply Company Head, Dies in Toledo

John A. Geismar, 61, president of The National Supply Company, died March 5 in Toledo, Ohio, after an illness of several months. He was connected with the company for 40 years.

Geismar was one of the pioneers in the oil industry. Born in Fort Wayne, Indiana, October 2, 1878, he received his early education there. He moved to Toledo in 1901, entering the employ of The National Supply Company in the mill and railway department. He started as a keeper of stock records and soon was appointed traveling representative in the Michigan territory. In 1906, he was made manager of the machinery and factory supplies department, generally known as the Toledo store. He held this position until 1919 when he was made director of merchandising for the entire company.

In 1923, Geismar was promoted to assistant general manager, and in 1924, he was named vice president and general manager. He held the latter position until April, 1939, when he assumed the presidency.

Geismar was an organizer of The Petroleum Equipment Suppliers Association and later served as its president.

Geismar was a 32nd-degree Mason, a member of Toledo Commandery and Zenobia Shrine. He was interested particularly in welfare work for crippled children.

After becoming president of The National Supply Company, he divided his time between Toledo and the Pittsburgh general offices of the company.

Sales Representatives Named For Waldron Couplings

E. J. Ehret and J. D. Kinsey, 307 South LaSalle Street, Chicago, have been appointed sales representatives in in the Chicago territory for the complete line of Waldron gear type and Francke flexible couplings manufactured by the John Waldron Corporation, New Brunswick, New Jersey.

Lane-Wells Announces Electrolog Survey Service

Lane-Wells Company will conduct a combination Electrolog survey service in fields where Electrolog equipment is operating, according to M. E. Montrose, general sales manager. Combination of two services is designed to result in a saving in down-time of from 2 to 2½ hours over the time formerly required for running each service individually.

After setting up at the well, Electrolog run is made to record formation resistivities and natural potential. As soon as the electrode comes out of the hole, a multiple shot survey instrument is attached and run to bottom. Hole inclination and direction is recorded magnetically on the film as the survey instrument is withdrawn. By surveying on the way out, any tendency toward instrument whipping or swaying is eliminated, thus making certain the instrument is parallel to the axis of the hole. As many as 250 readings can be made on a single run.

Leech Named Manager of New Koppers Company Office in Tulsa

Koppers Company, Engineering and Construction Division, has opened a branch in the National Bank of Tulsa Building, Tulsa, to serve the oil and gas industries of the Southwest, according to Joseph Becker, company vice president. W. A. Leech, Jr., formerly engaged in research and plant construction and operation for the company, is in charge of the office.

Associated Piping & Engineering Named Macwhyte California Agent

Appointment of Associated Piping & Engineering Company, 2332 East 38 Street, Los Angeles, as California distributor for Macwhyte wire rope has been announced by Jessel S. Whyte, president of Macwhyte Company, Kenosha, Wisconsin.

George Hutniston is president of Associated Piping & Engineering Company, and O. B. Kibele head of the distributor's oil field division. Richard R. F. Lehman is California oil field representative for Macwhyte Company.

Republic Steel Increases Facilities For Stainless Steel Manufacture

Keeping pace with the rapidly increasing demand for stainless steel, Republic Steel Corporation last week formally put into operation improved and greatly expanded stainless steel facilities at Canton and Massillon, Ohio.

With the exception of the hot rolling of coils which is done at nearby Warren, Ohio, the company has now concentrated all stainless steel operations in its plants at Canton and Massillon. It was in these two cities that earliest experiments with steel alloys were first carried on and the first commercial tonnage of alloy steels was produced. The expanded facilities give the company a stainless capacity in the strip department alone of 1200 tons per month.

Steel Buildings

Butler Manufacturing Company, Kansas City, Missouri, has issued a new catalog describing its line of steel buildings.

Larkin Packer Announces Sales Personnel Additions and Changes

Several additions to the sales force of the Larkin Packer Company, St. Louis, Missouri, have been announced by W. H. Larkin, company vice president and sales manager.

They include R. E. "Russell" Smith, who is making his headquarters in Mt.

NOTES FOR THE Equipment Buyer and User

Carmel, Illinois; Al Ferguson, who has been assigned to Pampa, Texas; H. F. Wright, who will operate out of Hobbs, New Mexico, and A. H. Rucker, who is making his headquarters at Fort Worth, Texas.

M. L. "Jack" Jackson was recently assigned a new territory including East Texas, North Louisiana, Arkansas and Mississippi. He is operating out of Shreveport. Burke Smith, who up to this time has made his headquarters in Evansville, Indiana, will move to Salem, Illinois. W. B. "Bill" Porter is taking up his new duties as district manager for the territory including Illinois, Indiana, Michigan, Kentucky, Kansas, Oklahoma, the Texas Panhandle and part of North Texas. His headquarters are in Tulsa.

Shugert Appointed Gulf Coast Acting Manager for Security

W. E. Sievers, vice president of Security Engineering Company, Inc., Whittier, California, has announced appointment of Cal M. Shugert as acting manager of the Gulf Coast division of the company, with headquarters in Houston. He replaces H. S. Sutton. Shugert joined the company's sales organization in September, 1939.

Mace Named Sales Representative for Jensen Brothers at Salem

Wynn Mace has been transferred from the factory of Jensen Brothers Manufacturing Company at Coffeyville, Kansas, to Salem, Illinois, where he will sell and service the company's pumping units under the direction of Tom Bagby, who is already stationed there. His appointment is in line with the company's policy of using factory-trained men for field sales and service whenever possible.

WYNN MACE

Supply Personals

K. H. Read, metallurgical contact man for Bethlehem Steel Company, presented a moving picture on "The Making of Alloy Steel" before a joint meeting of the A.S.M.E. and the Tulsa Engineers Club, March 4. R. G. Ayers, Bethlehem-International Supply Company, was chairman.

Claude Neil, Jr., is now employed as an engineer draftsman at Franks Manufacturing Company, Tulsa.

Bert Fleeger, president of Oklahoma Steel Casting Company and chairman of the Industrial Committee of Tulsa Chamber of Commerce, will talk on "Industrial Outlook for Tulsa in 1940" before the Tulsa Engineers Club on March 25.

T. N. St. Hill, president of Petroleum Rectifying Company of California, is at his desk in Los Angeles following a hurried trip to St. Louis and New York City, returning by way of San Francisco.

Ray C. Koster has joined The National Supply Company as salesman in the West Texas and New Mexico territory, with headquarters at Odessa, Texas.

Clyde McDonald, of the A-1 Bit & Tool Company, Houston, and S. Robeshaw are making an extended tour of West Texas and Mid-Continent fields introducing the B&K casing mill.

F. G. Flocke, of Development and Research Division of The International Nickel Company, Inc., gave talks on "Fabrication of Monel, Nickel and Inconel in Solid and Clad Plate Construction" before the Oklahoma City Section of the American Welding Society in Oklahoma City, Oklahoma, March 1, and before the Wichita Section of the Society in Wichita, Kansas, March 5.

D. H. Barnwell, Axelson Machine Company, Los Angeles, accompanied by C. C. McDermond of Maracaibo, is making an extended trip through Venezuela and Colombia.

Grafton Stewart, New York export manager for W-K-M Company in New York, is touring South America.

Thaddeus Putnam, in charge of the export office of Cameron Iron Works in New York, is studying field conditions in the Gulf Coast area of Texas and Louisiana.

C. Garvin Gosa, formerly with Happy Belting Company, has joined Okmulgee Supply Corporation and is now located at Gainesville, Texas.

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International Exposition to Present Safety Awards

For the purpose of recognizing safety practices in the oil industry and of emphasizing to the public safety records of the industry, the 1940 International Petroleum Exposition will award 12 individual prizes to supervisors and to drivers of company-owned passenger cars and trucks on the basis of accident-free records, according to H. W. Boggess, superintendent of safety, Sinclair Prairie Oil Company, Tulsa, who has been named chairman of the safety committee for the show.

"The awards will cover each of the four main branches of the oil industry: production, refining, pipe line and marketing," Boggess said.

"The contest for foremen or supervisors in each division will be based on the greatest accumulation of accident-free man-hours of work up to and including December 31, 1939," he explained. "Each of the four foremen or supervisors will receive a gold engraved wrist or pocket watch."

Four watches will also be given to drivers of passenger cars and four to drivers of company trucks. In each case a winner is to be selected from each of the four main branches of the industry. Presentations will be made at a safety banquet to be held May 23, during the exposition.

"Competition for these awards is open to supervisors and drivers in all parts of the world," Boggess stated. "It is fitting that the men who have the best records of safety and accident prevention be properly recognized, for through such efforts as theirs the petroleum industry has gained the reputation of being one of the safest of industries."

HENRY W. BOGGESS

Special features being planned for the presentation banquet will include an address by a speaker of national renown in the field of industrial safety

Official rules and entry forms may be obtained by addressing R. S. Huffman, Box 871, Tulsa. No entries will be accepted by the committee after April 20.

Revise Ratings for Multiple V-Belt Drives

Based on studies of belt life made by Allis-Chalmers Manufacturing Company engineers, in conjunction with industry representatives, the power ratings of multiple V-belt drives have been revised to provide maximum belt life. Sheave diameters and correction factors are now standardized according to formulae based on results with multiple V-belt drives over a period of 10 years.

Companies cooperating in the new standards include: The American Pulley Company, Browning Manufacturing Company, Inc., The Dayton Rubber Manufacturing Company, R. & J. Dick Company, Inc., Dodge Manufacturing Corporation, Fort Worth Steel & Machinery Company, The Gates Rubber Company, L. H. Gilmer Company, Goldens' Foundry & Machine Company, The B. F. Goodrich Company, The Goodyear Tire & Rubber Company, Inc., W. A. Jones Foundry & Machine Company, The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., The Medart Company, Pyott Foundry & Machine Company, Rockwood Manufacturing Company, United States Rubber Company, T. B. Wood's Sons Company, Worthington Pump & Machinery Corporation.

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Squeaks from the Bull Wheel

Explained

A Scot on holiday in Palestine came to the Sea of Galilee, and on inquiring the price of a pleasure boat found that they were 3 s. 6 an hour.

"Three-an'-sixpence," he exclaimed, and we can get one in Aberdeen for saxpence!"

"Ah! but this is Palestine," answered the boatman, "and these are the waters on which our Lord walked."

"Nae wonder He walked," was the dry retort.

a la Hitler

"Well, Ephraim, what are you preaching to your flock these days? I hear you are making a mighty stir."

"Well, sur, yassir I is. I gives it to 'um dis way: Fustly, I tells 'em what I'm gwine to tell'um den I tells 'um what I said I wuz gwine tell 'um, and den I tells 'um what I done tole 'um."

Thorough

"Mandy, have you swept under the bed?"

"Yassum. Everything."

Finesse

Dear you can't go to the theatre in your old coat, can you?

Certainly not, darling.

That's what I thought; so I only bought one ticket.

None to Turn

Parson—So you been fightin' again, Brother Jackson? 'Member what de good book say about turning de yutha cheek?

Brother Jackson—Yeah, Pahson, but dishere big boy hit me smack on mah nose, an' A'hs only got one.

What Bravery

"I heard a noise and got up. Right there under the bed I saw a man's legs sticking out."

"Mercy me, the burglar's legs?"

"No, my husband's legs. He'd heard the noise, too."

Routine

"A ham sandwich."

"A what?"

"A ham sandwich."

"Ham sandwich isn't on the menu, but I can give you a sandwich with ham in it . . . like a midnight special."

"What's a midnight special?"

"A triple decker with ham, cheese, tongue, baloney, tomato, lettuce, onion, pickle, mayonnaise, on raisin bread, toasted with cole slaw on the side."

"Look! Have you any ham?"

"Yes, sir!"

"White bread?"

"Yes, sir!"

"Could you place a piece of ham between two slices of white bread and serve same to me on a plate?"

"Why sure! (turning and yelling to soda jerker). One midnight special. Make it on one deck. Hold the cheese, tongue, baloney, tomato, lettuce, onion, pickle, mayonnaise, and cole slaw, and make the raisin bread white, untoasted . . . Right?"

Brotherhood

Say, old man, kin you help a brother Mason, Odd Fellow, Elk, Moose, Owl, Forester, or Labor Unionist?

I don't belong to any of them.

Ah, then, kin you help a fellow Methodist, Roman Catholic, Episcopalian, Disciple, Baptist, or Quaker.

I don't belong to any of them, either.

Ah, then, shake hands, partner, and assist a fellow socialist, uplifter, braintruster, and boondoggler in distress.

Soft Answer

An elderly man with flowing locks and a somewhat patriarchal beard once lived a secluded life near a noted college, and it was his habit to take morning walks through a semi-wooded tract near by.

On one of his leisurely morning strolls he was met by three of the young students, who conceived the idea of being facetious, and, as they thought, "funny," at the man's expense. They followed one another, a few steps apart, and the first one meeting him said, with assumed dignity and deference, "Good morning, Father Abraham;" the second one, "Good morning, Father Isaac;" the third one, "Good morning, Father Jacob."

Thereupon, the gentleman assumed a very patriarchal air and replied: "Kind sirs, I am not Father Abraham, nor am I Father Isaac or Father Jacob, but I am Saul, the son of Kish, who went out to seek his father's asses; and lo—I have found them."

Suspicious

A party of tourists were being shown over the cathedral by a guide.

"Behind the altar," he told them, "lies Richard the Second. In the churchyard outside lies Mary Queen of Scots; also Henry the Eighth. And who," he demanded, halting above an unmarked flagstone, "who do you think is a-lying 'ere?"

"Well," answered a near-by tourist, "I don't know for sure, but I have my suspicions."

Doctor Guessed

"I don't like your heart action. You've had some trouble with Angina Pectoris."

"You're partly right, doctor, only that ain't her name."

She Quit

Dear Boss: I am tired. I'm quitting this game.

My head has gone dizzy—my back has gone lame.

My seat is all calloused; my hand's paralyzed

From taking dictation. God help my poor eyes!

I've finished the brief in the Worchestershire Case—

A sloppy memento of this awful pace.

The Writ of Attachment was served on the Bank.

Defendant just called and he thinks it's a prank.

Miss Pewster was in and she asked that you phone.

Your wife's raising heck—says she's so alone.

The stamps are all gone, and you need a new chair.

Your nails could stand trimming; remember your hair.

I cleaned out the bottles and cigarette butts.

You'll need a new steno for this one's gone nuts.

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